THE STUDENT'S MANUAL

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THE STUDENT'S MANUAL

OUTLINES FOR STUDY

AND

CLASSIFIED QUESTIONS

IN

NATURE-WORK GEOGRAPHY HISTORY BIOGRAPHY
LITERATURE THE ARTS AND SCIENCES
INDUSTRIES AND INVENTIONS

WITH PAGE REFERENCES

TO

THE NEW STUDENT'S REFERENCE WORK

CHICAGO
F. E. COMPTON AND COMPANY
1910

GEORGE E. MAYCOCK

2970

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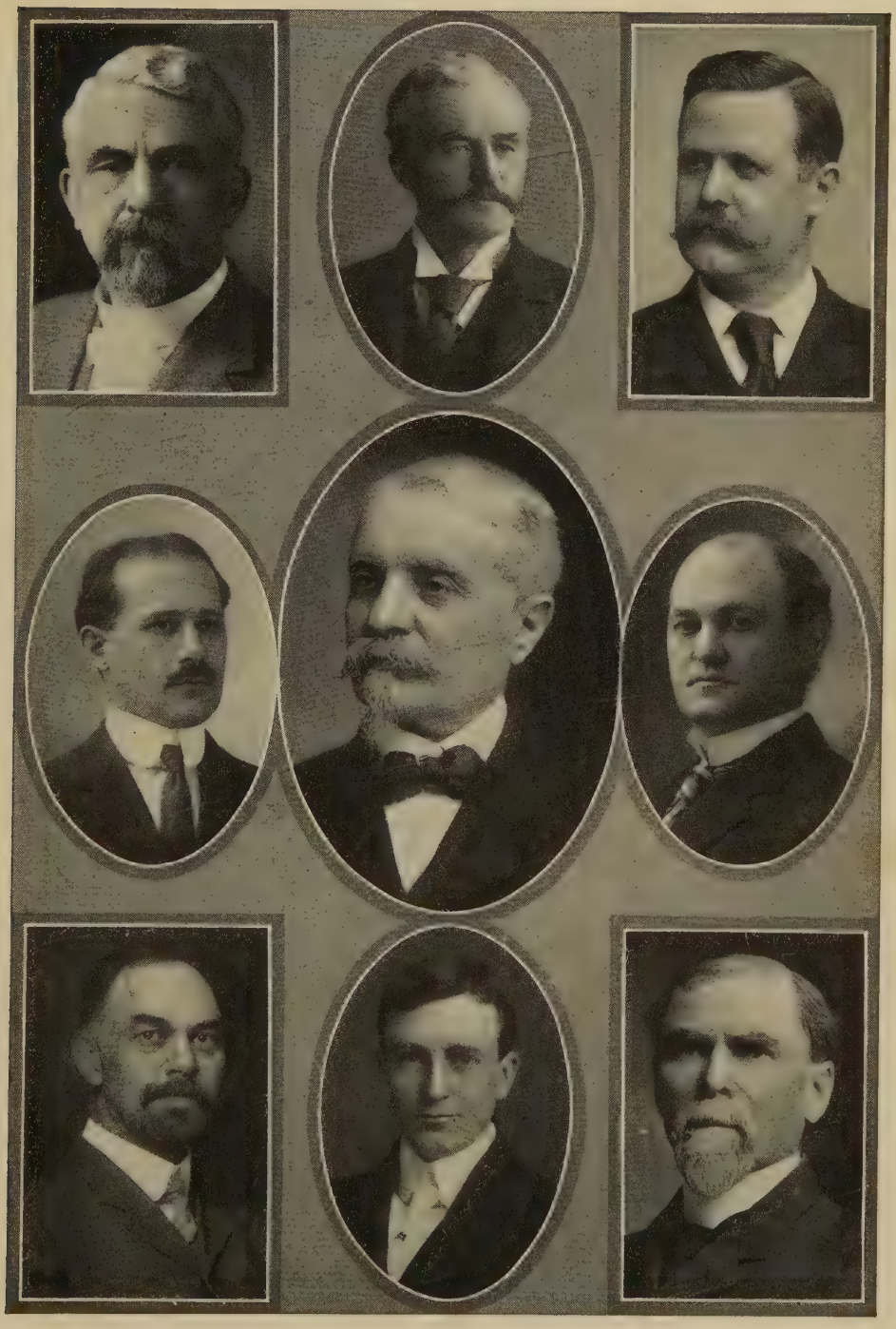

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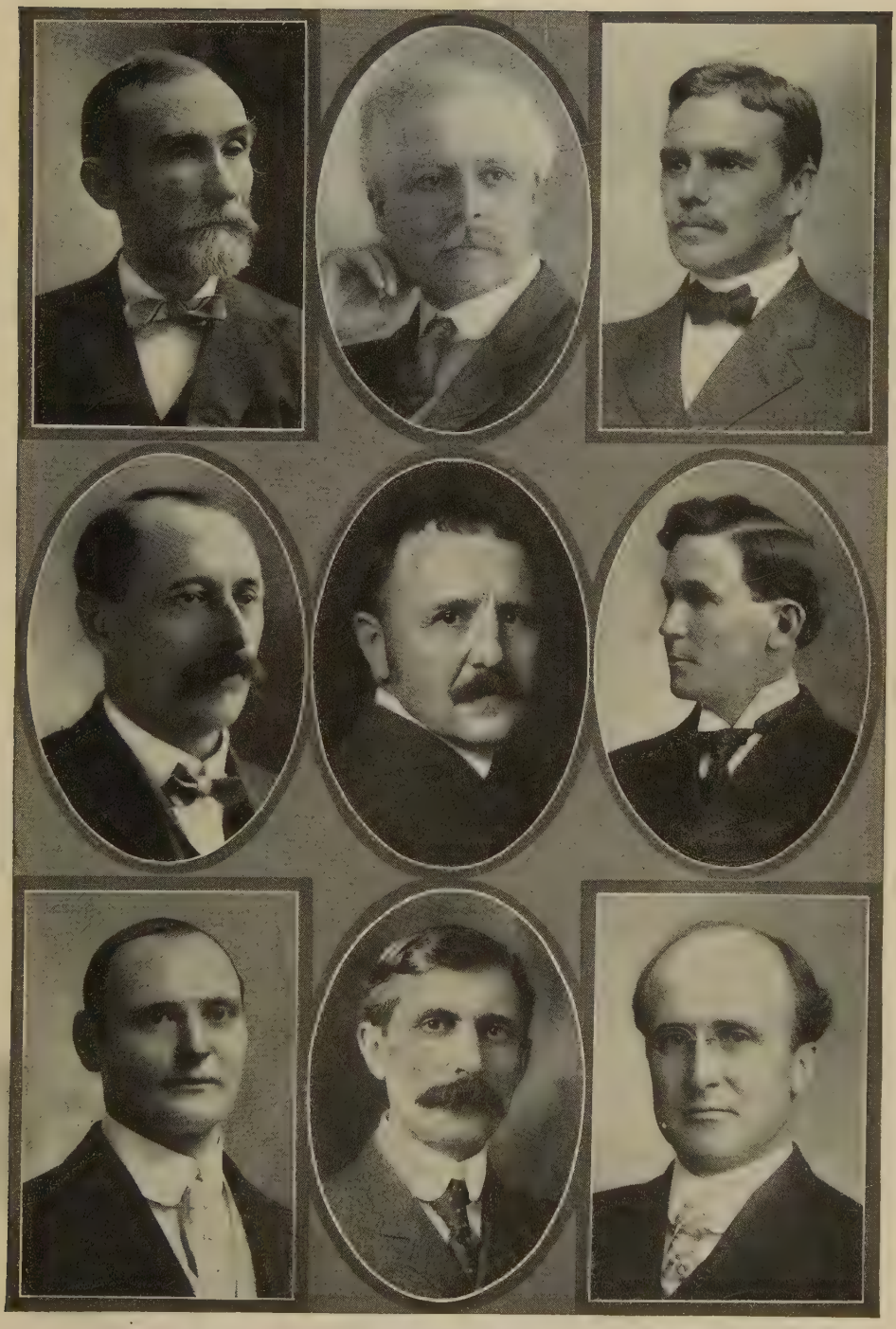

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INTRODUCTION

In order that our readers may readily appreciate the reliable and authentic information to be obtained from following the course of reading and study in *The Student's Manual,* we give a brief history of *The New Student's Reference Work*:

Over sixteen years ago Mr. Beach prepared *The Student's Cyclopaedia,* in two volumes, the pioneer reference work that has won the approval of the educators and the public. Then, with the assistance of a large corps of leading educators, he began gathering together new and valuable material, and after a long period of such preparation *The Student's Cyclopaedia* was entirely rewritten. New ideas were incorporated, the scope of the work was so broadened that it became more than a mere cyclopaedia, and a new work in three volumes was launched under the name of *The Student's Reference Work.* This gave such excellent satisfaction in supplying a real need in the home, that it has long been recognized as the standard work of its kind.

In making the latest edition, *The New Student's Reference Work,* our aim has been, not only to maintain the high *standard* character of *The Student's Reference Work* and to keep abreast of the times, but to move ahead along the most approved lines of educational work by securing the services and suggestions of those advanced and progressive educators who represent the best thought in the educational world. We were indeed fortunate in having, as editor-in-chief of this new work, the same man who, with such rare initiative ability, prepared *The Student's Cyclopaedia* sixteen years ago. The experience gained during these sixteen years in constantly studying the needs of students has given him the mature, broad judgment necessary to select the ablest editorial associates and to direct and supervise their work.

The names of the educators who have contributed to *The New Student's Reference Work* are alone a sufficient guaranty of authenticity and excellence. We wish, however, to acknowledge here the splendid assistance that has been rendered by over two hundred city superintendents, who have contributed articles, and to many other educators who have given us encouraging and helpful ideas.

The Student's Manual is the result of an earnest wish on the part of the publishers to render the great wealth of information contained in *The New Student's Reference Work* more accessible and helpful than is possible even with our especially devised system of cross indexing. To this end we had a series of ideal outlines for study prepared. These were arranged by educators best fitted for the task, whose only instructions were to make the most perfect outlines possible. When completed, our indexers merely inserted the page references.

This *Manual* is an aid to the teacher in summarizing subjects and in its suggestions. It is helpful to the student as an aid to school work, in the preparation of special topics, in reviews and in securing a comprehensive grasp of main subjects. It is of inestimable value to the young man who may be denied the advantage of a college education and must depend on his own resources to become that best product of our American civilization—"a self-educated man."

Two departments have been made in the *Manual.* The first consists of *Outlines.* The second contains over 6,000 interesting *Classified Questions.*

The Outlines, a new feature, cover the various departments of knowledge and not only give a complete synopsis of a subject, but indi-

cate the pages in *The New Student's Reference Work* where more detailed information may be found. Today the student must be brief and accurate, and these Outlines enable him to meet the requirements without unnecessary expenditure of valuable time and energy. Suppose, for example, that a student, teacher or general reader wishes to write a paper or get a review of English literature of the eighteenth century or, in fact, of any period of literature. In these Outlines the guide posts of the world's literature are presented so clearly and effectively that there is photographed on the mind a definite picture of the main features in the literary life of the world from before the time of Confucius down to the most modern writers of fiction. We direct your attention for a moment to the Outline on Young Folk's Literature. Every mother knows how difficult it is to select suitable stories to tell and read to young children. There is so much reading material that is really worthless thrown on the market, that it requires considerable experience to make a wise selection. In connection with the Outlines the educators have suggested a list of the choicest literary gems found in the story world, so that the mothers may know just what to place in the hands of their growing children. You will observe from this list that the child is introduced to the old classic fairy tales and the beautiful myths and legends which stimulate imagination, enlarge the vocabulary, create a desire for the choicest and best in books, and what is even more valuable, develop character.

It does not require much thought to realize how completely this graded list of literature for children covers the years of early childhood, when children demand stories, then on through the restless adolescent period when every boy craves the story of excitement and adventure, into the later high school and college ages, thus covering completely the dangerous periods in the child's life. Surely the educators appreciated the truth of the saying: "In making the right start, half the battle is won."

The Classified Questions form a means of study that, in the hands of the general public, has proven its value by sixteen years' experience. This Question idea was first introduced in *The Student's Cyclopaedia*, which we published in 1893. Inasmuch as these Classified Questions have filled a special niche in the home life for so many years, that feature has not only been retained, but in *The Student's Manual* has been strengthened and broadened to cover practically every department of knowledge. The editor's aim has been to select live questions which develop thought and expression, as well as fasten in the mind of the student the very meat of the subject under consideration.

Entire families have spent evening after evening in studying the questions and their answers. Parents have declared that when the long winter evenings have passed they have been amazed at the vast amount of information obtained and the studious habits acquired by every member of the household. Teachers and parents have realized that a strong home tie has been developed through this method of study, that is, a closer companionship and a stronger bond of sympathy between children and parents. This spirit of confidence in the home circle becomes the trusty safeguard in the future life of the boys and girls.

In a word: *The Student's Manual* has been prepared and arranged with all the skill that painstaking educators could command and is the *Key* to the vast library of information contained in *The New Student's Reference Work.*

THE PUBLISHERS.

ANALYTICAL INDEX.

The purpose of the editors in the preparation of *The New Student's Reference Work* has been twofold—to give an accurate, up-to-date, and interesting treatment of all subjects of value to teachers, students, and general readers and to make readily available all such information. To complete the work so well begun in the choice and treatment of subjects and in the general arrangement of facts in the various articles, a complete analytical index has been prepared and will be found at the close of Volume IV. The advantage of this Index may be briefly stated as follows:

(1) The selection of the subjects, which should be treated in separate articles, is the first task in the making of a reference work. Where a subject is not treated separately, however, information concerning it may be included in an article on another subject. At once it will be seen that without some means of locating such information much that is of value would be lost to the reader. Here the analytical index comes to his aid. An illustration of this point is found in the subject "Mosques" on Page 2203 of the Index. Here is a word of which the full meaning can be determined from any good dictionary. It is not, therefore, necessary to use space for that. There are, however, some important Mosques, the location of which is of value to the reader. These are all mentioned in other articles. By simply grouping in the Index the pages on which reference to "Mosques" is made all the information desired is obtained, needless repetition avoided, and space economized.

(2) There is a saving of time and needless annoyance by the use of the Index in being able to find the subject desired, irrespective of the title under which it is treated. For example, one may desire the biography of an author, but is only familiar with the pen name. Take for illustration "Marion Harland." In the text on Page 1892 the biography is given under the real name, "Mary Virginia Terhune." The Index, however, gives both names and proper page reference as follows:

Page 2181 of the index, *Harland, Marion,* (Mary Virginia Terhune) : 1892.

Page 2231 of the index, Terhune, Mary Virginia (*Marion Harland*) : 1892.

Thus one knowing the author under either the pseudonym or real name could find the biography as readily as though both names were known.

(3) An important feature is suggested by the references to "Agriculture," on Page 2140 of the Index. By use of this analytical arrangement one may quickly and with wonderful accuracy formulate a "brief" or an outline of any far-reaching subject such as this, and be fully prepared to take it before the school, to prepare a paper or talk, or to follow a course of reading as the occasion may require. To use "Agriculture" as an example: One would wish to consider first the "History of agriculture," and in that connection "Hebrew agriculture," Medieval agriculture,'" "Modern agriculture," the development of the science in all the various countries named, "experiment stations," "colleges and schools," etc. Next would come soils, and in this connection "alluvium," "capilarity of soils," "chemistry," "distribution of crops," "rotation of crops," "nitro-gathering crops," etc. Next, one would probably want to classify the different branches of farming, as fruit raising referred to in "apples," "grafting," "spraying mixtures," etc.; and stock raising, "poultry," "stock breeding," "stock raising," "stock feeding," "veterinary science;" and dairying, "butter," creamery," "cream separator," Babcock test," etc. The application of this principle to other subjects may be noted, as in the subject "Art," on Page 2144 of the Index.

(4) Noting carefully the foregoing, another advantage is brought into prominence, the ability on the part of the editors, through use of the Index, to condense their work, to eliminate repetition of facts and so classify subjects on which a great diversity of information is given, so as to provide space for a number of highly important special articles and make the volumes a compact, convenient and usable library of reference. It may be stated that, in the opinion of the publishers, no such successful work in this line has ever before been undertaken.

It is the urgent advice of the publishers that reference be always made *first* to the Index. Even in finding subjects treated under familiar headings this is good counsel, for with the page in mind one may find the article in a fraction of the time needed to locate it by use of the alphabetical arrangement. When it is remembered that in some cases the subjects will be found not specifically treated in a separate article, in some treated under a title unfamiliar to the reader, and in many cases much added information of value on the subject will be found indicated in additional references, one can appreciate not only the Index as a feature of *The New Students's Reference Work*, but the wisdom of the advice here given.

OUTLINES

NATURE STUDY

SPECIAL REFERENCES:

a. **As related to child life:** 1307.
b. **Nature study in the lower grades:** 1307.
c. **Material:** 1308.
d. **Methods:** 1308.
e. **The Camera in Nature Study:** 1309.

I ANIMAL LIFE.

1. **MAIN CLASSES OF ANIMALS:** Animal kingdom 74; arthropoda 114; vertebrates 2015; tunicates 1950; geology 2133.
   a. **Insects:** Illustrations — flies 687; "darning needle" or dragon fly 549; scarabæus or tumble-bugs 1687; butterflies 296; hornets 886; silkworm moth 1757; chinch-bug 389; potato-bug 1537; fire-fly 676; peripatus 1453; cockroaches 418; cochineal 417; canker or fire worm 322.
   b. **Fishes:** 678; trout 1945; bass 179; cod 418; salmon 1666; perch 1451; pike 1490; haddock 821; mudfishes 1274.
   c. **Amphibians:** Frogs 719; toads 1917; and salamanders 1664.
   d. **Reptiles:** 1601; snakes 1773; alligators 52; lizards 1104; tortoise 1925; turtle 1958; terrapin 1892; crocodile 480.
   e. **Birds:** 217; sparrow 1791; hawk 850; robin 1620.
   f. **Mammals:** 1154; cat 347; dog 538; elephant 604; monkey 1252; horse 886; house-pets 889.

2. **STUDY OF INSECTS:** 928.
   a. **Parts of an Insect:** 928; ant 76; bee 191 beetle 194; spiders 1798.
      (1) **Head:**
         (a) **Antennæ or feelers, what they are like:** Cockroaches 418; aphides or plant lice 82.
         (b) **Eyes:** Insects 928; dragon-fly 548.
         (c) **Mouth-parts:**
            1. **Upper lip and jaws:** Beetle 194; weevil 2064; ant-lion 81.
            2. **Parts for biting and for sucking:** 929; Butterfly 297; caterpillar 350; waterbug 2052.
      (2) **Thorax:** 928.
         (a) **The wings and legs:** Insects 929-30; crickets 477; grasshoppers 796.
      (3) **Abdomen and the way it is joined to the thorax:** 2050.
   b. **Stages through which most insects go in developing from the egg to the full-grown adult insect:** fly 687; mosquito 1269.
      (1) **The egg stage:** 928; 297; 350.
         (a) **Number of eggs:** Bee 191; mosquito 1269.
         (b) **Where they are laid:** Bee 191; fly 687; mosquito 1269; moths 1270-71.
         (c) **When laid:** Moths 1270; crickets 477; grasshopper 796; ladybug 1019.

(2) The larval stage—worm or caterpillar stage: Centiped 359; silkworm 1759; larva 1032; caterpillar 349.
- (a) Food of insects in this stage of development: 1032.
- (b) The stage in which the most damage is done: Army-worm 109; Cottonboll weevil 465.

(3) The pupal stage—cocoon: pupa 1564; butterfly 297; silkworm 1757.

(4) Winged stage—full grown: moth 1270; butterfly 297; ladybug 1019.

(5) The time of development from one stage to the next: Cicada or 17 year locust 398; katydid 993.

(6) In what form the insect lives from one summer to the next: mosquito 1269; codlin moth 419.

3. STUDY OF FISHES: 678; 677.

a. Some parts of the fish: Heart 853; 67.

(1) The gills:
- (a) How they are used in breathing: Respiration 1603.
- (b) Has the fish lungs? Mudfishes 1274; fishes 678.

b. How the fish is protected: sturgeon 1841; torpedo 1924; swordfish 1858; fish-culture 677.

c. Food of the fish: 678; 1734.

d. Fish-eggs: 677; 678.
- (1) When and where laid: 1827.
- (2) Number of eggs: 589, 678.

4. STUDY OF THE FROGS—AMPHIBIANS: 719; Animal life 524; amphibia 65; salamander 1664; egg 589; blood 401; heart 854.

a. Their development:

(1) Their Eggs: 1917.
- (a) Appearance: 1917.
- (b) Jelly-like part around the real egg inside and the two purposes of the jelly: Toad 1917.
- (c) Where they are laid: Salamander 1664.

(2) The Young Tadpole:
- (a) Its appearance at first: 719; 1917.
  1. Lack of legs: 65.
  2. The gills: 719; 65.
- (b) Why it cannot live on land: 719.

(3) The Secondary Stage of Development:
- (a) Disappearance of gills and development of lungs: 720; 65.
- (b) Development of a pair of hind legs, then a pair of front legs: 720; 1917.
- (c) Shrinking of the tail: 720; 1917.

(4) The Full-Grown Amphibian:
- (a) Why and how can live on land: 719.
- (b) Food of the Amphibians:
  1. Of what it consists.
  2. How it is obtained.
  3. The peculiarity of the tongue and how it is used in getting food.
- (c) Amphibians as destroyers of insects: 1344; 1918.

5. STUDY OF REPTILES: 1601; 589.

a. Main kinds of reptiles: Snakes 1773; turtles 1958; alligators 52; lizards 1104; crocodile 480; dragon 548; chameleon 364; gila monster 765.

b. **Snakes:** 1773; rattlesnake 1588; copperhead 452; boa 231; cobra 417.
- (1) **Color, scales and fangs:** 1773.
- (2) **Moulting of skin:** 1773.
- (3) **Means of movement:** 1773.
- (4) **Food:**
  - (a) **Of what it consists:** rattlesnakes 1588; copperhead 452.
  - (b) **How obtained:** black snake 223.
  - (c) **How digested:** Boa 231.

c. **Turtles:**
- (1) **Protective covering of the turtle:** 1958.
- (2) **Different kinds of turtles:** 1959.
- (3) **Manner of swimming and diving:** 1959.
- (4) **Food, how obtained, of what it consists:** 1959; 1925.
- (5) **The eggs of the turtle:** 1959; 589.

6. **STUDY OF BIRDS:**

a. **Classification of birds:** 217.

(1) **As to zone on the earth where found:**
- (a) **Tropical birds:** parrots 1425; birds of paradise 218.
- (b) **Birds of temperate zones:** hawks 850; crows 482; sparrows 1791.
- (c) **Birds of cold climates:** Auk 138; goose 780; migration 1223; owl 1404.

(2) **As to the habitat without regard to climate:**
- (a) **Water-birds:**
  1. **Divers:** like the loon 536; gull 814; albatross 39; pelican 1442.
  2. **Swimmers:** like the duck 557; goose 780; swan 1853.
  3. **Waders:** like the heron 869; crane 473; and flamingo 680.
- (b) **Shore-birds:** like the snipe 1773; and plover 1505.
- (c) **Land-birds:** like the quail 1570; turkey 1995; robin 1620; and bluebird 231.

b. **Things to notice in studying birds:**

(1) **Size — compared with some very common bird, as the robin which measures 10 inches:** 1620; lark 1031; oriole 1394.

(2) **Color:**
- (a) **Is it to attract attention like the Baltimore oriole's?** 164.
- (b) **Is it for protection like the meadow larks?** 1194.
- (c) **Notice the differences in color between the male and the female:** as in the bobolink 232.

(3) **Notice the special markings:** as in the plover 1505; the owl 1404.

(4) **The shape:** as in the loon 536; the flamingo 680; the emu 613.

(5) **The bill, wing, tail and feet:** as in the pelican 1442; hummingbird 898; falcon 647; albatross 39; gull 813; peacock 1434; condor 440.

(6) **Movements on land:** as skulking the rail 1581; walking the adjutant 14; running, the sandpiper 1674; ostrich 1398; diving, the divers 536; swimming, the ducks 557.

(7) **Their movements in the air:** speed, the falcon 647; endurance, the kite 1007; floating, the buzzard 297; dashing, the fly-catchers 687; the fishhawks 678.

(8) **Their songs:** call-notes and alarm-notes, the Virginia nightingale 334; the canary 321; the mockingbird 1245; the bittern 221; whooping crane 473.

(9) **The food of birds, and how they obtain it:** the crows 482; the adjutant 14; the vultures 2031; the hawks 850; the kingfisher 1004; the owls 1403; the nighthawks 1350.

(10) **The location and forms of their nests; the number and color of their eggs; and the way their nests are constructed:** birds' nests 217; the oven-bird 1002; thrush 1907; the oriole 1394; the tailor-bird 1865; the swallow 1852; the eggs 589; bob-white 233; weaver-bird 2060.

(11) **The migration of birds:** 1223.

7. **STUDY OF MAMMALS:**

a. **The characteristics which distinguish mammals from other animals:** 1154.

b. **Important classes of mammals:** 1154.

(1) **Marsupials:** 1177; kangaroo 988; opossum 1387; wombat 2105.

(2) **Rodents:** 1623; rats 1588; rabbits 1577; porcupine 1528; gophers 781; beavers 188.

(3) **Hoofed animals:** Ungulates 1966; cow 352; horse 886; pig 1856; deer 513; 1599.

(4) **Carnivora:** tiger 1911; wolf 2103; fox 703.

(5) **Primates: Manlike animals:** monkeys 1252; chimpanzees 388; apes 81.

c. **How each kind of mammal is specially fitted to live as it does:** size; strength; legs; teeth; jaws; feet. (See references above.)

d. **Some domesticated mammals:** House-Pets 889; dog 538; cat 347; sheep 1736; cow 352; hog 1856; horse 886.

(1) **Animal from which each has probably developed:** evolution 637. (See under above heading.)

(2) **How they first might have been tamed:** 538; 348; 886.

(3) **Which was probably domesticated first?** 352; 538; 1736.

(4) **The relation between the teeth and the kind of food the animal eats:** 886; 889; 540.

(5) **The methods of defence of the domesticated animals:** 232; 539.

(6) **Which animals are best protected from the cold?** Sheep 1736; beaver 188; bear 185.

(7) **The relative intelligence of the different domesticated animals:** 348; 539.

(8) **Which wild animals are most like each of the main domesticated animals?**
- (a) **Horse:** 886; ass 122; zebra 2129; quagga 1569.
- (b) **Dog:** 539; wolves 2103; jackals 952.
- (c) **Cat:** 348; tiger 1911; lion 1077; leopard 1056; puma 1560; jaguar 955.

e. **Two common wild animals:**

(1) **The squirrel:** 1806; 1623.
- (a) **How the squirrel is suited to his manner of life.**
- (b) **Characteristics of his teeth, feet, tail, fur.**
- (c) **The kind of food which the squirrel eats.**
- (d) **How food is stored.**
- (e) **How he lives through the winter.**
- (f) **The summer home and the winter home.**

(2) **The rabbit:** 1577; 837.

Note: Study with same outline as above for the squirrel, noting the difference between the rabbits and hares.

II. PLANT LIFE.

1. VARIETIES OF PLANTS:

a. Flowering plants that reproduce themselves by enclosed seed:

(1) **Kinds:** 73 (Angiosperms).
- (a) **Trees:** woody stem, single 1940; trunks grow at least 20 feet tall, oak 1367; maple 1166; apple 95.
- (b) **Shrubs or bushes:** woody stem — not a single main trunk, rose 1633; briar 1855.
- (c) **Vines:** woody, slender climbing stem, grape 794; ivy 950; pea 1432; Virginia creeper 2035; morning-glory 1263; clematis 407.
- (d) **Herbs:** plants with stems not woody, dying down to the ground each year, beets 1845; grass 795; grains 2073; strawberries 1837; mustard 1292; mint 1237; saxifrage 1685.

b. Flowerless plants that reproduce themselves by exposed seed:

(1) **Kinds:** 818 (Gymnosperms).
- (a) **Evergreens of temperate zone:** conifers 443; pine 1491; cedar 354.
- (b) **Cycads of tropics:** 492.
- (c) **Ginkgo — maidenhair tree:** 767.
- (d) **Gnetums of the deserts:** 818.

c. Flowerless plants reproduced by means of spores instead of seeds:

(1) **Kinds:** 1897.
- (a) **Ferns:** common forms of the woods 656.
- (b) **Mosses:** bare — soil-moss 1282; hair-moss 1270; hepatica 865; peat 1436; 1125.
- (c) **Lichens:** gray growths on fence-boards and rocks 1859.
- (d) **Algæ:** sea-weeds and slimes on surface of ponds 48; 392; 904; 491; 1463; 1609; 522.
- (e) **Fungi:** moulds — yeasts 2121; mushrooms 1284; grain smut 227; 1479; 178; 17; 1949; 1678; 1420.
- (f) **Bacteria:** 154 plants that cannot be seen with the naked eye — smaller than the finest dust 657; 761; 1633.

(2) **How reproduced:** by means of spores 1803; 1601; 1796; 117; 1804; 661.

2. MEANS OF REPRODUCTION:

a. Flowers — fitted to produce seed:

(1) **Parts:** 686.
- (a) **Stamens:** produce pollen 1808.
- (b) **Stigma:** receives pollen 686.
- (c) **Calyx:** floral display 312.
- (d) **Corolla:** 459.

(2) **Forms:** 925.
- (a) **Single.**
- (b) **Clusters.**

(3) **Fertilization:** 657.
- (a) **Self-pollination:** 1518.
- (b) **Cross-pollination:** 1518.
- (c) **By insects:**
  1. Nectar feeding: like the butterflies and moths 1519.
  2. Pollen feeding: like the bees and wasps 1519; 192.
  3. How the insects know the food: 1519.

b. **Fruits:** contain mature seed 721; 1523.

(1) **Kinds:** 721; pear 1434; apple 85; gourd 787; gooseberry 781; raspberry 1587.

(2) **How distributed:** 1717; 1519.
- (a) **Wind:** 1718; milkweed 1226; catalpa 348; maple 1166; tumbleweed 1950.
- (b) **Water:** 1718.
- (c) **Animals:** 1718.
- (d) **Explosion of pod:** violet 2022.

(3) **Special adaptation for seed-distribution:** 1718.
- (a) **Seed wings:** 1894; maple 1166; 1718.
- (b) **Plumes:** 1718; milkweed 1226; catalpa 348.
- (c) **Barbs:** 1718; dandelion 500.

c. **Runners and cuttings:** 1552; 1643.

d. **Selections and crossing to obtain new varieties called hybrids:** 1500; 789.

3. **GERMINATION:** 760; 657; 614; 1718.

a. **Parts of seed:** 611.
- (1) **Covering:** 931; 1894.
- (2) **Cotyledon:** 465.
- (3) **Caulicle:** 353.
- (4) **Plumule:** 1506.

b. **Development:**
- (1) **Plumule developing into stem:** 1747.
- (2) **Radicle into the root:** 1632.
- (3) **Cotyledons:** 611.
  - (a) Leaflike.
  - (b) Not leaflike.

4. **NOURISHMENT OF PLANTS:** 1366; 532; 1420; 1242; 847.

a. **Green plants:** that can make their own food.

(1) **Chlorophyll:** green bodies that do the work 393.

(a) **Work:** to provide nourishment for leaf 690

(2) **Chemical changes in leaf:** 1479; 18; 1041.
- (a) **Make carbohydrates and proteids:** 1479.
- (b) **Give off oxygen and vapor:** 1936.
- (c) **Put food in solution:** 531.
- (d) **Respiration:** 1602; 1210.

(3) **Work of roots and stems:** 2051; 1632.

b. **Plants not green:** having no chlorophyll, they cannot manufacture own food.

(1) **Kinds:** 724; mushrooms 178; moulds 1479; mildews 117; truffles 1946; yeast 2121; rust 1649; toadstools 178.

(2) **How they live:** 1678; depend on green plants and on animals 1420; 1859.

(3) **Where they grow:** 1479.

5. **ROOTS OF PLANTS:** 1632; 2051.

a. **Purpose:** to hold fast and absorb food 1294.

b. **How direction is determined:** water and gravity 859.

c. **Kinds:** taproot and hair-roots 1632.

6. TREES:

a. **Kinds:** 693; 1940.

(1) **Leafshedding:** 512; maple 530; 1166; oak 1367; apple 85; ash 117; elm 609; beech 192; tulip 1949; hickory 872; horse-chestnut 887; catalpa 348.

(2) **Evergreen:** do not shed leaves, cypress 492; pine 1492; fir 675; hemlock 860.

b. **Parts:**

(1) **Roots:** 1632.
- (a) **Ascent of water:** 2051.
- (b) **Vascular bundles:** 2004.

(2) **Trunk:**
- (a) **Bark:** 172.
  1. **Differences in bark:** 462.
  2. **Work of bark:** 466.
  3. **Growth of bark:** 621.
     a. How wood is formed on inside: 1678; cambium 312; blast 179; trees 1940; heartwood 854.

(3) **Wood:** 1930.
- (a) **Heartwood:** 854.
- (b) **Sapwood:** 1673.
- (c) **Rings and layers and their meaning:** 1940.

(4) **Branches:** 259; 818.

(a) **Different positions in various trees:** pine 1492; elm 609; hemlock 860.

(5) **Flowers and fruits of trees:** 1367.
- (a) **Shade trees:** oak 1367.
- (b) **Fruit trees:** 721.
  1. **Dry:** maple 1166.
  2. **Fleshy:** peach 1434; plum 1506; cherry 377; apple 85; pear 1435.
- (c) **Forest trees:** 693.

(6) **Leaf:** 1480; Cyclic; Spiral.

7. AGRICULTURAL PLANTS:

General References: agriculture 26; balanced ration 159; ensilage 619.

a. **Forage crops:** 651; alfalfa 46; corn 457.

(1) Work: benefit to soil 1353; root tubercles 1633.

b. **Grains and grasses:** 795; wheat 2072; rye 1650; rice 1610; oats 1638; pea 1432; millet 1227; alfalfa 46; clover 413; cowpeas 470; buckwheat 283.

(1) **Character of roots:** nitrogen crops 1352; root 1632; root pressure 1633; root stock 1633; root tubercles 1633.

(2) **Stems:** 795; 1821.

(3) **Flower:** 795.

(4) **Difference in grains:**

(a) **Length of root:** 46.

(b) **Hardiness:** 283; cowpeas 470; rye 1650; oats 1638.

c. **Root crops:** tuber 1948; potato 1537.

(1) **Difference in character:** 1632.

(2) **Materials taken from soil:** phosphates 1475; potassium 1537; sulphur 1846; nitrogen 1353; fertilizers 657; manures 1165; rotation of crops 1636.

III. PHYSICAL NATURE STUDY:

1. **STUDY OF ROCKS:** Geology 747; Evolution 636.

a. The main kinds of rocks in the earth's crust:

(1) Unstratified rock:
- (a) Granite, rock made up of crystals — mainly quartz: 1571; 792; 653; 1036.
  - 1. The "hard-heads" of the fields: 553.
- (b) Trap rock, dark, granular rock: 1938; 177.
  - 1. The Palisades of the lower Hudson River: 1938; 894; 1571.

(2) Stratified rock — which is in layers:
- (a) Sandstone, rock made of grains of sand held together by a cement: 1673; 1674.
  - 1. Notice the material of which gravel stones are made: sand 1673; gravel 796.
  - 2. "Brown stone" houses: Ohio 1374; sandstone 1674.
- (b) Limestone, composed mainly of lime: 1072.
  - 1. "Flag stone": 1773; chalk 363; limestone ledges 1072; marble 1167.
- (c) Shale, a finely stratified rock made from mud and silt: 1733; 406.
- (d) Slate, a clay rock made from shale by great heat: 1733.
  - 1. Slate roofing: pencils 1444; slates 1733.
- (e) Clay, mainly from the decay and powdering of other rock: 406.
  - 1. Brick and potter's clay: 1538; 265.

b. The making of rock:

(1) Igneous rock, rock which has been molten, unstratified:
- (a) The first rock of the earth: 638; 1529; 747.
- (b) Granite: 792; trap rock 1938; hardened lava 1036.

(2) Sedimentary rock — stratified:
- (a) Made from material deposited by water in the ocean, lakes and beds of streams: shale 1733; sandstone 1674; limestone 1072.
- (b) How the material is broken off and worn away from the older igneous rock: sand 1673; Sahara 1654; earth 574; drift 553.
- (c) How the material is carried by water: alluvium 53; earth 574; chalk 363.
- (d) How the material is deposited: sand 1673; earth 574; alluvium 53.
- (e) Cementing of the particles together by lime and silica: pebble 1437; shale 1733; silica 1757; lime 1071.
  - 1. Effect of heat in this: mineralogy 1231; lime 1071.

(3) How rock fossils are made in the sedimentary rock:
- (a) The fossils of plant-life: fossil 701; geology 749; paleontology 1409; evolution 638.
- (b) The kinds of plants which are shown: geology 749; fossil 701.
- (c) The fossils of animal life which are found: horse 886; geology 750; evolution 638.

(4) The formation of coal: 413. (Study with reference to outline.)
- (a) Luxuriant vegetation in marshes, warm climate.
- (b) Slight sinking of the land so as to make a shallow sea.
- (c) Deposit of sediment material on the fallen vegetable growth.
- (d) Increased pressure and heat to change part of the vegetable material to coal.

(5) The stages in the making of coal: peat 1436; brown coal 1070; soft or bituminous and hard or anthracite coal 413.

c. The making of soil:

(1) Kinds of soil:
- (a) Sandy soils: 1778; 1673.
- (b) Clayey soils: 1778.
- (c) Vegetable soil: 1778; 1636; 53.
- (d) Mixtures of clay and sand with vegetable matter to make sandy and clayey loam: 1165; 1353; 898.

(2) How the decay and disintegration of rock are brought about: the work of water, frost, temperature and glaciers: 770; physiography 1483; Sahara Desert 1654.

2. STUDY OF THE ATMOSPHERE:

a. Its position in relation to the earth: 34.

b. Height to which the air extends: 34.
- (1) How the height is known: aeronautics 18; barometer 174.
- (2) Highest balloon ascensions: aeronautics 19; Gay-Lussac 741.

c. Pressure of the air on the surface of the earth — amount per square inch or foot: 33.

d. The decreasing density of the air as we ascend: aeronautics 18; air 34; barometer 174.
- (1) Difference between density at base and tops of mountains: barometer 174.

e. The characteristics of the air:
- (1) Tasteless, odorless, colorless, elastic; it has weight and is compressible: air 33; nitrogen 1353.
- (2) Why we do not feel its weight: 33.

f. Composition of air:
- (1) Oxygen, which makes things burn and which, in breathing, we take from the air: its amount 1405; 739.
- (2) Nitrogen, the work which it does for us: the amount in the air 1353; 739.
- (3) Carbonic acid gas, its relation to animal and plant life: 332.
- (4) Water-gas or vapor: 2051; evaporation 636; gas 739; barometer 174; clouds 412; natural gas 1306.

g. **Moisture of the air:**

(1) **Evaporation of water:**
- (a) **Under what conditions evaporation goes on best:** 636.
- (b) **Temperature and dryness of air:** evaporation 636; rain 1582.
- (c) **Places from which most of the water is evaporated:** Sahara Desert 1654; Dead Sea 570; Tibet 1909; Atacama Desert 129.

(2) **Condensation of vapor:**
- (a) **How condensation is brought about:** rain 1582: fog 688; distillation 535; frost 720.
- (b) **What is meant by the dew-point:** 526.
- (c) **Clouds, what they are and how formed:** 412.
- (d) **Fog and mist:** 688.
- (e) **Rain:** how it is formed 1582.
- (f) **Snow and hail:** how they are formed and how they differ 1773; 824.
- (g) **Dew and frost:** what each is and how each is formed; how they differ from each other; best conditions for formation; effect of wind and clouds on formation: dew 526; frost 720; rain 1582.

3. **ELEMENTARY ASTRONOMY:**

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- (1) **The original nebulous mass:** 1316; 127.
- (2) **Condensation of part of the mass and the resulting increase in rate of rotation:** 1316.
- (3) **Throwing off of parts due to centrifugal force:** 1316.
- (4) **Masses making what we call planets thrown off from the sun:** 1316.

b. **The eight planets with their satellites:** 1499; 1682; names, size and position in relation to the sun and the earth 1500; sun 1848; moon 1259; Kepler 1000.

c. **The earth — our planet:**

(1) **The movements of the earth:**
- (a) **Rotation:** time of rotation, inclination of the axis 573.
- (b) **Revolution:** time of revolution, shape of path around the sun 573; gravitation 796; equinox 622; eclipse 579; Copernicus 451.

d. **The moon — the satellite of the earth:** 1259.
- (1) **Size:** 1259.
- (2) **Distance from the earth:** 1259; 573.
- (3) **Character of its surface:** 1209.
- (4) **Its lack of atmosphere and of life:** 1259.
- (5) **Why its shape apparently changes:** 1259; 579.

e. **The fixed stars:** 1813.
- (1) **The North Star:** 1360.

f. **Meteors and comets:** 1212; 432; 129.

g. **The Milky Way:** 1226.

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2. THE SIZE OF THE EARTH:
   a. Length of circumference and diameters: 573.

3. MOTIONS OF THE EARTH:
   a. Rotation: 573; 451; 279; 730.
      (1) What is meant by poles and axis: 573; 1516.
      (2) The Pole Star and the Big Dipper: 1516; 186.
      (3) Cause of daylight and darkness: 573; 1848.
      (4) Longitude and Time. The Meridian of Greenwich: 1204; 807; 1114; 1913.
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      (1) The Earth's orbit: 574; 451; 1000; 1344; 127; 796.
      (2) The angle of inclination: 573; 1544; 2133.
      (3) The cause of the seasons of the year: 574; 1715.

4. THE CONTINENTS AND THE OCEANS:
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      (1) Ocean currents — causes: 1369; 813; 1017.
      (2) Tides — causes: 1910; 1259.
      (9) Waves — causes: 2058.

5. MEANS BY WHICH THE EARTH'S SURFACE IS CHANGED:
   a. Work of volcanic forces:
      (1) Geysers, hot springs, volcanoes, earthquakes: 762; 2027; 1805; 574.
      (2) Rising and sinking of land: 2028; 749; 1483.
   b. Work of the atmosphere:
      (1) The changes of the atmosphere: 33; 1931; 2094; 1833; 750.
      (2) How it makes soil: 1778.
      (3) The winds: 2094; Trade, 1931; monsoon, 1253; simoom, 1759; cyclone, 492.
   c. Work of running water:
      (1) How it wears away the earth's surface: 747; 2051; 100.
      (2) How it carries earthy material and deposits sediment: 518; 1240; 590; 2122; 53.
      (3) The general effect of running water: 2051.
   d. Work of the glaciers:
      (1) How they wear away the land: 770; 1206; 365.
      (2) How they make deposits of rock and soil: 553; Soils, 1778.
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6. DISTRIBUTION OF PLANTS AND ANIMALS ON THE EARTH:
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      (1) Vegetation regions: Africa, 23; America, 59; Central America, 60; South America, 61; Asia, 119; Austria, 145; Europe, 633; France, 705; German Empire, 756; Mexico, 1215; Italy, 947; Spain, 1788.
      (2) Control by moisture, soil, heat, latitude and altitude: Iceland, 911; Soils, 1778; Agave, 25; Crops, 29; Australia 142.
      (3) How plants are adapted to conditions in which they live: 1501.
      (4) The great deserts, grasslands and forests of the world: Africa, 22; Gobi, 776; Sahara, 1654; Mohave, 1247; Australia, 142; Pampas, 1415; Tibet, 1909; Texas, 1895; Central America, 60; So. America, 61; Black Forest, 222; Forest Reserves, 693; Russia, 1646; Mexico, 1214.

b. Animals:
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(2) Animals of the world: See color plates and half tones 24; 62; 144; 677; 1252; 1309; 1577, 1812; 1958.

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a. Races: 1578.
(1) Their distinguishing characteristics: 22; 60; 118; 142.

II. THE CONTINENTS:

Note: Study the continental divisions, as given below, with special reference to the following outline:

1. SIZE AND POSITION IN RELATION TO OCEANS AND OTHER CONTINENTS:
a. Position on the earth.

2. CHARACTER OF COAST-LINE:
a. Location of important bays and gulfs.
b. The islands along the coasts.

3. SURFACE:
a. The highlands.
(1) Mountains and plateaus, heights and areas.
(2) Location, character, extent.
b. Drainage and divides — the largest rivers.
c. Coastal plains.

4. VEGETATION AND ANIMALS.

5. INHABITANTS.

III. GEOGRAPHY OF THE COUNTRIES OF THE WORLD:

Note: Each of the divisions given below to be studied with the following outline:
a. Area, location, character of surface, mountains, rivers and lakes—drainage, capitals and important cities — with reasons for importance.
b. Climate and soils.
c. Resources — agriculture, mining and manufacturing. Kinds, quantity, importance of products.
d. Exports and imports.
e. Races.

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(b) Alberta: 39; chief cities 307, 583, 1058, 1197; chief rivers 1692; railroads 320, 792.
(c) Saskatchewan: 1681; chief cities 1598, 1547; rivers 1681, 397; railroads 320, 792.
(d) Manitoba: 2095; chief cities 2095, 260; lakes 2095, 2096, 1022; rivers 1596.
(e) Ontario: 1385; chief cities 1924, 1399, 831, 1111, 1005, 260, 2094, 810, 1662, 1461, 1836; lakes 1022, 1352, 1383; canals 1683, 2065; water boundaries 900, 755, 1656, 524, 624, 1345, 1385, 1659, 1400; water powers 319, 1346.
(f) Quebec: 1571; chief cities 1258, 1573, 1657, 896, 1739; rivers 1659, 1400; lakes 1658, 365, 1572.
(g) New Brunswick: 1324; cities 1658, 1250, 712; water boundaries 724, 383, 1659, 362; rivers 1658, 1324.

(h) **Nova Scotia:** 1362; Cape Breton Island 328; chief cities 827, 1858, 769; water boundaries 724, 132, 1659.

(i) **Prince Edward Island:** 1547; chief city 372; railroad 1547.

(2) **Districts and Territories:**

(a) **Yukon:** 2127.

(b) **Mackenzie:** 1138.

(c) **Keewatin:** 995.

(d) **Ungava:** 1966.

(e) **Franklin:** 708.

(1) **Newfoundland** 1341; **Labrador** 1016.

b. **United States:**

(1) **New England States:** Connecticut, 443; chief cities 845, 267, 1326; Maine, 1149; chief cities 137, 166, 1532; Massachusetts, 1184; chief cities 248, 312, 2109, 1121; New Hampshire, 1325; chief cities 439, 1156; Rhode Island, 1606; chief cities 1555, 1343; Vermont, 2012; chief cities 1257, 292.

(2) **Middle Atlantic States:** New York 1331; chief cities 38, 1384, 285, 1860; New Jersey, 1327; chief cities 1941, 1340, 970; Pennsylvania, 1446; chief cities 843, 1496, 1465; Delaware, 516; chief cities, 547, 2090; Maryland, 1181; chief cities 74, 162; Virginia, 2023; chief cities 1612, 1355; W. Virginia, 2071; chief cities 371, 2075.

(3) **Southern Atlantic States:** North Carolina, 1357; chief cities 1583, 2090, 372; South Carolina, 1784; chief cities 430, 371, 804; Georgia, 752; chief cities 132, 1683, 137; Florida, 683; chief cities 1867, 954, 1868; Alabama, 35; chief cities 1244, 218.

(4) **Southern States of the Mississippi Valley:** Mississippi, 1240; chief cities 953, 2018, 1207; Tennessee, 1889; chief cities 1303, 1201, 1009; Louisiana, 1118; chief cities 182, 1330, 1748; Arkansas, 100; chief cities 1101, 698, 888; Texas, 1895; chief cities 141, 1671, 891; Oklahoma, 1376; chief cities 817, 1378, 1736, 619.

(5) **Central States:** Missouri, 1241; chief cities 966, 1659, 991, 1658, 979; Illinois, 915; chief cities 1805, 379, 1450, 1575, 1622; Iowa, 934; chief cities 523, 556, 1761, 506, 355; Wisconsin, 2098; chief cities 1142, 1229, 1850, 1578; Michigan, 1218; chief cities 1029, 523, 792, 184; Indiana, 920; chief cities 921, 635, 699, 1892, 1783; Ohio, 1373; chief cities 432, 409, 399, 1921, 509; Kentucky, 997; chief cities 707, 1119, 469, 1343; Minnesota, 1236; chief cities 1661, 1235, 559, 2096; North Dakota, 1358; chief cities 219, 648, 792; South Dakota, 1786; chief cities 1489, 1761; Nebraska, 1314; chief cities 1073, 1381, 1787; Kansas, 988; chief cities 1923, 991, 2082, 1043.

(6) **Plateau States:** New Mexico, 1329; chief cities 1676, 41; Colorado, 428; chief cities 521, 1559, 429, 1041; Wyoming, 2115; chief cities 379, 1030; Montana, 1254; chief cities 858, 296, 799, 66; Arizona, 100; chief cities 1473, 1949, 219, 1544; Utah, 1994; chief cities 1667, 1372; Idaho, 912; chief cities 237; Nevada, 1323; chief cities 342, 2025; California, 308; chief cities 1651, 1671, 1116, 1368; Oregon, 1391; chief cities 1664, 1532, 127; Washington, 2044; chief cities 1380, 1715, 1864, 1800.

(7) **Possessions:** 809; 1415; 1469; 1533; 1669; 848.

(8) **Districts:** 37; 535.

c. **Mexico:** Territorial Division 1216; chief cities 1213, 808, 1559, 1055; 1256; 1673, 1207, 809, 1868; Principal States 384, 1368, 2010, 2128, 1435; Volcanoes 1528, 1394, 951, 979.

d. **Central America:** Political Divisions 60, 196, 463, 809, 883, 1347, 1415, 1668; chief cities 1673, 1155.

e. **The West Indies:** Islands and Groups 2070, 157, 80, 808, 484, 825, 956, 1533, 1048, 1179, 2025, 2094, 1942, 1677; chief cities 847, 1676, 1006.

2. **SOUTH AMERICA:**
   a. **Review of physical geography:** 58.
   b. **Brazil:** 261; chief cities 1616, 157, 1453, 1418, 1454, 1677; Rivers 57, 53, 1142, 1501, 1420, 1616, 1393.
   c. **Argentina:** 94; chief cities 285, 1030, 95; Rivers, 1501, 1420, 1993; Mountains, 7, 61, 94.
   d. **Chile:** 386; chief cities 1676, 2000, 936, 387; Islands 980, 1911, 1428.
   e. **Ecuador:** 580; chief cities 1576, 810, 580; Mountains 388, 464.
   f. **Peru:** 1456; chief cities 1071, 575, 94, 1457.
   g. **Boliva:** 238; chief cities 1483, 1029, 1538, 239.
   h. **Colombia:** 426, 235.
   i. **Venezuela:** 2008, 331, 1998.
   j. **Gulana:** 811, 752, 1420.
   k. **Uruguay:** 1992, 1256, 1993.
   l. **Paraguay:** 1419.

3. **EUROPE:**
   a. **Review of physical geography:** 632.
   b. **Great Britain and Ireland:** 798, 1707, 2034, 1155, 936, 366; chief cities 1110, 1102, 772, 1156, 219, 1737, 256, 313, 1404, 556, 581, 561, 195; Colonies 24, 918, 1151, 361, 1190, 883, 142, 1873, 1339, 661, 1304, 328, 1937, 1389, 189, 1607, 493, 117, 170, 1753, 196, 2129, 777, 316, 1341, 205, 157, 956, 2094, 1048, 811, 764, 13, 1657, 1153; Places of Greatest Interest 674, 764, 1002, 847, 1734, 1025, 1897.
   c. **France:** 703; chief cities 1421, 1128, 1176, 246, 1071, 1928, 1299, 1656, 1637, 848, 1605; Mountains 148, 1566, 2030, 983, 55; Colonial Possessions 24, 49, 1950, 1723, 1843, 496, 716, 1141, 1604, 920, 923, 716, 1324, 2070, 435, 950, 1654, 1724, 1780, 312, 417.
   d. **Spain:** 1788; chief cities 1143, 171, 1998, 1729, 1181, 342; Rivers 1865, 808, 546; Colonies 1789, 24, 160, 322. **Portugal:** 1534; chief cities 1079, 1387; Colonies 330, 1535, 73, 149, 427, 1105, 1141, 24, 812, 1549, 1663.
   e. **Belgium:** 195, 681; chief cities 279, 81, 763, 1066. **The Netherlands:** 878; chief cities 824, 65, 1637, 1996; Possessions 966, 1846, 247, 1325, 811, 487, 1249, 1850.
   f. **Denmark, Norway and Sweden:** 520, 649, 803, 911, 451; 1361, 1687, 1854, 1030; chief cities 395, 202, 1827, 784.
   g. **Russia:** 1645; Main Divisions 674, 1512, 1749, 353, 1954, 1001, 237, 1363; chief cities 1661, 1268, 2043, 1371, 1002, 1107, 1615, 2026; Rivers 1349, 565, 1323, 537, 543, 2028.
   h. **Germany:** 756; chief cities 204, 829, 264, 1277, 552, 1051, 425, 707, 1365, 835; Main Divisions 183, 1555, 1686, 1756; Colonies 24, 757, 755, 760, 1001, 1325, 219, 339, 1442, 1669; Rivers 502, 1606, 2068, 594, 1371, 2026; Canals 502, 756, 321, 756.
   i. **Switzerland:** 1857; Mountains 55, 983, 982, 1189, 1655, 1657; Lakes 2137, 446, 743, 1122; chief cities 2137, 743, 178.
   j. **Italy:** 946; chief cities 1300, 1629, 1223, 744, 683, 2009, 1494; Colonies 624, 1780; Volcanoes 2017, 629, 1078.
   k. **Austria-Hungary:** 144; Main Divisions 236, 248, 498, 1756; chief cities 2020, 283, 1942, 1542; Mountains 55, 340; Rivers 502, 537, 1247, 2026.
   l. **Rumania:** 1643; chief cities 282, 965; **The Balkan Peninsula:** 161; **San Marino:** 1673.

4. **ASIA:**
   a. **Review of physical geography:** 119.
   b. **Siberia:** 1749, 987; Rivers 1369, 2123, 943, 1052; railway 1750; chief cities 2026, 938.
   c. **Turkestan:** 1954, 1001, 1414, 1873.
   d. **Asiatic Turkey:** 1955, 120, 1861; chief cities 447; 1666, 16, 1772, 156, 498, 1940.
   e. **Syria:** 1861, 208, 498, 1414; **Palestine** 1411, 729, 766, 970, 1314, 1380.
   f. **Arabia:** 87, 1282, 1244.
   g. **Persia:** 1455; chief cities 1863, 1880, 946; **Afghanistan** 21; chief cities 986, 987, 866; **Baluchistan,** 164.
   h. **India:** 918; main divisions 199, 292, 239, 1563; chief cities 305, 240, 1142, 1123, 1586, 199, 517, 1021, 354; Rivers 924, 735; **Ceylon** 361, 426.

i. **Indo-China:** 923; Main Divisions 1922, 67, 312, 417, 1029.
j. **Chinese Empire:** 389; Main Divisions 1157, 1251, 1908; chief cities 1442, 327, 1911, 1734, 834, 1299, 883.
k. **Korea:** 1011, 1724.
l. **Japanese Empire:** 960; chief cities 1920, 1396, 1009, 2123, 1006.
m. **Malay Archipelago:** 1151, 1443; The Philippines 1469; largest islands 1125, 1230; chief city 1158.

5. **AFRICA:**

a. **Review of continent as a whole:** 22.
b. **Egypt:** 590, 1843, 1565; chief cities 304, 45, 1530.
c. **North Africa:** Tripoli 1943; 658; Algeria, 49, 50, 1388; Tunis, 1950, 1951; Morocco, 1263, 658, 1264, 1869.
d. **Congo Free State:** 441.
e. **British South Africa:** 328.
(1) **Cape Colony:** 328; cities 330, 1530, 1002; mountains and promontories 329; rivers 1389, 1937.
(2) **Orange River Colony:** 1389; cities 228, 1389.
(3) **Natal:** 1304; cities 563, 1304, 1305.
(4) **Transvaal:** 1937; cities 1546, 973.
(5) **Other dependencies:** 180, 189, 1607.
f. **German:** 755, 24; French, 716, 717, 1843, 24; Portuguese, 1535, 1305, 2128, 24.
See also German, French, Portuguese, Italian, Spanish and Turkish colonies above.

6. **AUSTRALASIA:**

a. **Australia:** 142, 745, 1331, 2018, 2069.
(1) **Queensland:** 1574, 144; cities 268, 144.
(2) **New South Wales:** 1331, 143; cities 1858, 1331; rivers 504, 1282, 1331.
(3) **Victoria:** 2018, 143; chief city 1200.
(4) **South Australia:** 144.
(5) **Western Australia:** 2069, 144.
b. **Tasmania:** 1873, 718, 1339.
c. **New Zealand:** 1339, 449, 1522; geysers 762; cities 2067, 1340.

THE CHARTS OF HISTORY.

Note: The charts beginning opposite page 877, Vol. II, of *THE NEW STUDENT'S REFERENCE WORK* should be consulted. They supplement *The Outlines of History* by giving their subject-matter in the order of time and in parallel columns.

In these charts the landmarks of the world's history are presented by centuries. Contemporary nations are ranged side by side, each designated by a separate color, and the chief events in the history of each nation are recorded with the proper date. The contemporary events of a century are taken in at a glance, and thus the eye is brought to the aid of the mind in grasping the whole current of history. The wonderful efficiency of this method a brief study will demonstrate. It is to history what maps are to geography.

> **"Sounds which address the ear are lost and die**
> **In one short hour; but that which strikes the eye**
> **Lives long upon the mind; the faithful sight**
> **Engraves the knowledge with a beam of light."**

EXPLANATION.

The date of each century is given in heavy figures in the left margin. In Chart I note that the blue on the left represents the Hebrew nation. Going down these columns, we get the progressive history of each nation. For instance, we trace the history of the Hebrew nation from the time of Noah down to the period when, in 975 B.C., the one nation became two through the revolt of the Ten Tribes. This change is marked by a change of color under the headings Judah and Israel, and then we have the two nations instead of one. In like manner we have the history of Egypt and Greece. On the other hand, looking across the page we get the contemporary history of each century. We find that Joash in Judah, Elijah and Elisha in Israel, lived in the same century with Homer the Greek poet. In the next chart we see that in 721 B.C. the Assyrian empire, which had come into power, carried the Ten Tribes captive. So the color disappears, and its place is occupied by the color representing Assyria. We see that about 700 B.C. the Assyrian empire was overthrown and succeeded by the Babylonian empire; and later the Jews were wiped out, being carried captive to Babylon. So, by looking down this column, we get the complete history of these nations. In the same way we get the continuous history of Greece, and, in the last column, Rome. Looking across the page, we see that Hezekiah and Isaiah in Judah, the captivity of the Ten Tribes and the Epoch of the Olympiads, from which the Greeks reckoned time as we do from the time of Christ, and the founding of Rome were contemporary in the eighth century B.C. In like manner we see that the captivity of the Jews, the period of the seven wise men of Greece etc. occurred in the same century. In the next century we see that Xerxes, the mighty ruler, Ezra, Nehemiah and Malachi, the last of the Old Testament writers, were contemporary with Socrates and the Laws of the Twelve Tables, being the first time that the celebrated Roman laws were reduced to writing. Passing to later history, the next page shows the history of England, France, Germany and other nations of the world down to the sixteenth century. Looking from the top to the bottom of the first column, we will trace the history of England through these centuries. We see that the Danish kings were succeeded by the Norman kings; that the House of Plantagenet ran until 1399, when the House of Lancaster came into power, and was succeeded by the House of York and then by the House of Tudor. And so of each of the other nations. Looking across, as before, we get the contemporary history of each century.

The first six charts cover general history. We have five more which are given especially to the history of the United States and one on Canadian history. Chart VII is the colonial chart. The first thing that will attract your attention is the fact that Virginia was the oldest colony, as shown by the position of the color representing Virginia on the page. The next was New York, and the third was Massachusetts. These were the great mother colonies. We also notice that Maryland and North Carolina were originally a part of Virginia and were separated from it. So New Jersey and Delaware were part of New York; Connecticut, Rhode Island and New Hampshire were originally part of Massachusetts; South Carolina, Pennsylvania and Georgia were originally settled on the dates given. Looking across, at the top, we see that the first settlement was at Jamestown in 1607; the next on Manhattan Island by the Dutch, in 1614; and the third by the Puritans, in 1620. Looking down the column, we see that tobacco was first introduced in 1615; slavery, 1619; cotton, 1621, etc. Passing down into the next century, we have the chief events of the Revolutionary War. Then follows a chart on the history of the United States after the adoption of the Constitution. Few persons can give, in their proper order, the names of the Presidents of the United States, and tell which had one term and which two. Here they are given in a very striking way: Washington, two; Jefferson, two; Madison, two, and so on. Wherever there are two terms, the different administrations are separated by a line and the chief events of each administration are recorded. On the right we have the events which occurred in the Old World. In like manner Chart XII gives us a complete, progressive history of Canada. We thus show how simple and effective these charts are. If we think of New York, involuntarily the map is before our eye and we see just where New York stands on the coast. We see Chicago as it stands at the head of Lake Michigan. We see all the other prominent cities of the country and know just how they stand in relation to each other. We learn the positions easily and readily. How? By a study of the map. In this way geographical positions are learned easily even by young children. It is because through the eye there is photographed on the mind the position of different places to each other. Now these charts in like manner locate events. They are made very simple by placing only the landmarks of history. Heretofore, charts have defeated the very object for which they were intended, by putting on so many events that the eye was confused and burdened. Here we give only the landmarks, and in this way the trouble and confusion of studying history are forever done away with. The test of use has proved that this is the most effective method of aiding either old or young to clearly understand and remember the facts of history in their proper order, and especially to fix in the mind the contemporary events of any given century.

HISTORY

I. THE ANCIENT EGYPTIANS.

1. **LOCATION OF THEIR COUNTRY:** 590.

2. **THE BEGINNING OF THEIR HISTORY:** 591.

3. **THE FOURTH DYNASTY AND ITS ACHIEVEMENTS:** 591; 1368.
   a. **Date of its control:** 591.
   b. **Cheops and the building of the Pyramids:** 1565; Sphinx 1797; Sesostris 1727; Isis 945; Heliopolis 859.
   c. **The city of Memphis:** 1201.

4. **THE HYKSOS KINGS:** 906; 979.
   a. **Their final overthrow:** 591.

5. **THE PHARAOHS:** 1464; 1585; 1269.
   a. **The city of Thebes:** 1898; Ramession 1585; Temples of Karnak and Luxor 1887; Memnon 1201.

6. **THOTMES III AND THE EMPIRE OF EGYPT:** 591; 629; 313; 1521; Shishak 1746; Cambyses 313; Petrie 1462; Atlantis 133; Lepsius 1057; archæology 91.

7. **INDUSTRY OF THE PEOPLE:**
   a. **Agriculture the chief industry:** 26; 940; 46.
   b. **Metal and leather working, making of linen, brick, glass:** 1043; 1076; 265; 2005; 773.

8. **SCIENCE AND ART:** 591; 668.
   a. **Astronomy:** 750; Ptolemy 1558; astrology 127; geometry (Euclid) 631; algebra 48; architecture 92; literature 1082; Alexandrian Library 46; sculpture 1711; Karnak 1887; Luxor 1888; medicine (Hippocrates) 875; geography 745.
   b. **The use of hieroglyphics:** Rosetta Stone 1635; writing 2113; pen 1443.
   c. **The use of papyrus:** 1418; 1417.
   d. **Embalming:** mummy 1276; pyramids 1565; catacombs 348.
   e. **The mechanical tools invented and used:** 591.

9. **THE RELIGION OF THE PEOPLE:** races and religions 590; mythology 1296; Serapis 1725; scarabæus 1687; Ammon 64; oracle 1387.

II. THE BABYLONIANS, ASSYRIANS AND PERSIANS.

GENERAL REFERENCES:

Susa 1852; Ecbatana 578; Nineveh 1352; Nippur 1352; Persopolis 1454; Ispahan 946; Bagdad 156.

1. **LOCATION:** Babylonia 152; Assyria 125; Persia 1455; The Medes 1197; Mesopotamia 1210.

2. **THE PEOPLE:** 152; Semites 1722; Aryans 116; Iranians 936; Semiramis 1722.

3. **THEIR ARTS:** Assyrian art 668; architecture 93; archæology 91; Seven Wonders 1727; libraries 1063; brick 265; cuneiform 486; Shiraz 1746; book 243.

4. **THEIR WARS AND CONQUESTS:** Cyrus 493; Cambyses 313; Darius 503; Xerxes 2118; Crœsus 480; Lydia 1126; fortification 700; Sardanapalus 1679; Sardis 1680; Salamis 1664; Marathon 1167; Greece 801; Jerusalem 970; Jews 972.

5. **THEIR RELIGION:** Zoroaster 2136; Darius 504; Magi 1144; Parsis 1426; Persian literature 1081; oracle 1387.

III. THE HEBREWS.

1. **THE ORIGIN OF THE PEOPLE:** Palestine 1411; Semites 1722; Jews 971; Syria 1862; Abraham 4; Ur 1991; Moses 1269; Nebo 1314; Jacob 955; Josephus 979.

2. **THE WANDERING:** 971; Egypt 591; Joshua 979.

2. **THE CAPTIVITY:** Cyrus 493; Babylonia 153; Nebuchadrezzar 1315; Esther 627.

4. **THE WORK OF THE PROPHETS:** Jeremiah 969; Job 973; Isaiah 944; Daniel 501; Samuel 1670; Elias 605; Ezekiel 644; Maccabees 1130; Habakkuk 820.

5. **SAUL THE FIRST KING:** 1683; Philistines 1470.

6. **DAVID THE HERO OF THE JEWS:** 506; Jews 972; Assyria 125; armor 105.

7. **SOLOMON THE ORGANIZER OF THE GOVERNMENT:** 1779; 1963.

8. **THEIR LITERATURE:** Bible 209; literature 1081; calendar 306.

9. **THE DIVISION OF THE KINGDOM:** Palestine 1411; Samaria 1669; Jews 972. See, also, Charts I and II.

IV. THE PHŒNICIANS.

1. **THE LAND OF PHŒNICIA:** 1473; 1722; 1862; 302.

2. **LOCATION OF TYRE AND SIDON:** 1963; 1753; 1862.

3. **AS MERCHANTS, TRADERS AND SEAMEN:** 1753; 1963; 745.

4. **THEIR ARTS AND PRODUCTS:** 1753; 1722; 2113.

5. **COLONIES ON THE MEDITERRANEAN COASTS:** 1473; Carthage 343; Sicily 1751; Cyprus 493; Thebes 1899; Utica 1995; Malta 1153; Spain 1788.

V. HISTORY OF THE GREEKS.

1. **THE EARLIEST GREEKS:** Greece 801; Pelasgians 1442; Argos 96; Tiryns 1915; Aryans 116; Crete 477; Epirus 622.
   a. **The migration into Greece:** 801; 545.
   b. **What Homer tells of them:** 882; Argonauts 95; Cassandra 346; Ulysses 1965; Troy 1945; Helen 858; Achilles 7; Paris 1422; Agamemnon 25; Arion 96; Orestes 1392; Æneas 17.

2. **GREEK COLONIZATION:** Colony 427; Corinth 455; Sicily 1751; Syracuse 1861; Dorians 545; Smyrna 1772; Cyprus 493; Eubœa 630.

3. **SPARTA:** 801; 1792; 26.
   a. **The three classes of citizens:** 1792; 1453; 578.
   b. **The institutions and laws of Lycurgus:** 1125; 1792.

4. **ATHENS:** 130; Attica 134; Greece 801; Bœotia 233; Aristides 97.
   a. **The laws of Draco:** 547; 1779.
   b. **Solon the lawgiver of Athens:** 1779; 94; 480.
   c. **The oracles and the Olympian games:** 1387; 1381; Pythian games 1568; Delos 518; Milo 1228.

5. **THE WARS WITH PERSIA:** Darius 504; Xenophon 2117; armor 105; trireme 1943.
   a. **Battle of Marathon:** 1167; Miltiades 1228; Aristides 97; Plataea 1502; Cimon 399.
   b. **Battle of Thermopylæ:** 1901; 1056.
   c. **Salamis and Platæa:** 1664; 1502; 1899.

6. **REBUILDING OF ATHENS:** 130.

7. **THE AGE OF PERICLES:** 1452; 399.
   a. **Building of the Long Walls:** 130.
   b. **Relations with Sparta:** 1453.
   c. **The Confederacy of Delos:** 518.
   d. **Art, Literature and Religion:** Art 669; Seven Wonders 1727; Apelles 82; Æsop, Æschylus Æsculapius 21; Diana 527; Pluto 1507; vases 2005; Parthenon 1426; literature 1082; Homer 882; Herodotus 868; philosophy 1472; philology 1471; libraries 1063; astronomy 127; theatre 1898; œdipus 372; drama 550; calendar 306; Euripides 632; Anaxagoras 69.
   e. **Famous men:** Pericles 1452; Herodotus 868; Phidias 1465; Socrates 1777; hemlock 860; Epicurus 621; Pythagoras 1567; Thucydides 1908; Diogenes 533; Aristides 97; Pisistratus 1441; Aristotle, Aristophanes 97; Plato 1502; Euclid 631; Pindar 1491; Alcibiades 41; Theophrastus 1900.

8. **THE PELOPONNESIAN WAR:** Peloponnesus 1443; Corinth 455; Pericles 1453; Bœotia 233; trireme 1943; Arcadia 90; Thucydides 1908; Nicias 1348.
   a. **The victory of Sparta:** 1792; 620; 41.

9. **RISE OF MACEDON AND ITS CONQUEST OF GREECE:** 1135; 1468; 1906.
   a. **Opposition of Demosthenes:** 519.

10. **THE EMPIRE OF ALEXANDER:** 44; Greece 801; Egypt 591; Diogenes 533. See, also, Chart III.
    a. **Conquest of Persia:** 455; 1899.
    b. **Alexander made emperor of Persia:** 44.

VI. HISTORY OF THE ROMANS.

1. **ROME:**
   a. **Early history of the Romans:** 1626; Etruria 630; Veii 2007; pottery 1539; Pompeii 1524.
   b. **The founding of the city:** 1629; 1631.
   c. **Stories of the kings:** Numa Pompilius 1365; Sabines 1651; Tarquin 1872; Horatius 885.

2. **ROME AS A REPUBLIC:** 1627.
   a. **The plebians and what they wanted:** 1941.
   b. **Cincinnatus:** 400.
   c. **Works of the kings and emperors:** 1629; Tarquin 1872; circus 401; Janus 960.

3. **ROME AND CARTHAGE:**
   a. **Carthage and its people:** 342; 1995.
   b. **Rome and Carthage compared:** 342.
   c. **The Punic Wars:** 343; 1562; Utica 1995; Hannibal 834; Hamilcar 830; Hasdrubal 846; Trasimenus 1939; Cannæ 323; Sicily 1751; Scipio 1706; Numidia 1365; Zama 2128.
   d. **The destruction of Carthage:** 343; Scipio 1707.

4. **CONQUEST OF MACEDONIA AND GREECE:** Roman Empire 1627; Macedonia 1135; Corinth 455; Polybius 1521.

5. **CIVIL WAR IN ROME:** 1627.
   a. **The Gracchi:** 788.
   b. **Mærius and Sulla:** 1172; 1845; Mithridates 1243.
   c. **Caesar and Pompey:** 303; 1524; Lepidus 1056; triumvirate 1943; Rubicon 1641; Sparta 1792; France 704; Helvetii 860; Catiline 251.

6. **ROME AS AN EMPIRE:**
   a. **Work of Julius Cæsar:** 303; calendar 306; libraries 1063; Cleopatra 408; Antony 81; Brutus 280; literature 1083.
   b. **The reign of Augustus:** 137; 1627; Actium 9; Antony 81; Lepidus 1056; Prætorian Guard, 1542; Arminius 105; German empire 758.
   c. **The reigns of Trajan, Hadrian and Marcus Aurelius:** 1627; Trajan 1934; York 2123; Hadrian 822; Aurelius 139.
   d. **The division of the empire:** 1627; Diocletian 533; Constantine 447.
   e. **The downfall of Rome:** 1627.

VII. HISTORY OF WESTERN EUROPE.

(I) FALL OF ROME TO PROTESTANT REVOLUTION:

1. **THE BARBARIANS:** Europe 634; Helvetii 860; Alemanni 43; Germans 758; Vandals 2002; Huns 898; Attila 134; Alaric 37; Goths 784; Dacia 495; Genseric 744.
   a. **Their character:** Sarmatians 1681; Scythians 1712; Slavs 1766.
   b. **Their invasions of the Roman empire:** Teutones 1895; Cimbri 399; Marius 1172; Lombards 1109; Genseric 744; Alemanni 43; Aurelius 139.

2. **CHARLEMAGNE:**
   a. **His predecessors — Charles Martel and Pepin the Short:** Merovingians 1208; Carlovingians 335; Martel 371; Poitiers 1512; Pepin 1450.
   b. **The extent of his empire:** 368; Europe 634; Saxons 1685; Lombards 1109; France 704.
   c. **Coronation at Rome:** 1054.
   d. **His work in civilizing and educating the people:** 368; States General 1813; guilds 811; Alcuin 42; Eginhard 589.

3. **CHRISTIANITY:** The Virgin Mary 1180; Peter 1461; Paul 1431; Stephen 1822; Barnabas 172; Cyprus 493; Antioch 81; catacombs 348; Diocletian 533; Constantine 447; Roman Empire 1627; Ambrose 58; Augustine 137; Julian the Apostate 981; Photius 1475; Lateran 1034; Jerome 970; The Vulgate 2030; Leo III 1054; Gregory 804; Patrick 1429; 937; Saint Nicholas 1348.

4. **THE CHURCH IN THE MIDDLE AGES:**
   a. **Clovis and his army:** 413; 1512.
   b. **Conversion of England:** 616; 804.
   c. **Boniface and the Christianizing of Germany:** 243.
   d. **The monasteries and the monks:** Capuchins 331; Franciscans 707; Dominicans 543; Saint Patrick 1429; Dunstan 562; libraries 1063; Assisi 123; St. Andrews 1655; Catania 349; Stylites 1842; Bede 190; Jerome 970; Abelard 3; Anselm 75; Aquinas 87.
   e. **Church Councils:** 396; pope 1527; reformation 1598.
   f. **Universities:** 1987; Bonn 243; Heidelberg 858; Sorbonne 1782; Bologna 239; Montpellier 1258; Salamanca 1664; Louvain 1120; Prague 1542.
   g. **The cathedrals:** See Index.

5. **THE NORTHMEN AND THEIR CONQUESTS:** 1359; 520.

6. **FEUDALISM IN THE MIDDLE AGES:** 658.

7. **CHIVALRY AND HERALDRY:** 1008; 866.

8. **THE CRUSADES:** 483; Peter the Hermit 1459; Jerusalem 970; Richard I 1610; Tancred 1868; Saladin 1663; Malta 1153; Louis IX 1116.

VIII. HISTORY OF ENGLAND.

1. **ANCIENT BRITAIN:**
   a. **Celtic:**
      (1) **Tribes:** Gaels; Britons; Celts 357; Picts 1488; Scotland 1708; Wales 2034; York 2123.
      (2) **Primitive people:** 116.
   b. **Roman Britain:**
      (1) **The conquest and rule by the Romans:** Roman Empire 1627; Agricola 26; Hadrian 822; Boadicea 232; Vespasian 2016; Leicester 1050.
      (2) **Roman roads and fortifications in Britain:** Agricola 26; Hadrian 822; Severus 1728; London 1111.

2. **THE ENGLISH CONQUEST:**
   a. **Angles and Saxons as conquerors of Britain:** Saxons 1685; Wales 2034; Jutland 984; Arthur 114; Edward the Confessor 585; heptarchy 866; jury 983.

(1) The rule of Alfred: 48; England 616; Bede 190; ship 1743.
(2) Effects of the conquest on the language spoken in England: 618; 2113.

3. THE DANISH CONQUEST: Denmark 520; Canute 327; Dunstan 562.

4. THE NORMAN CONQUEST: 2085; 1356.

5. RISE OF THE ENGLISH NATION: 588.
   a. Reign of Henry II — Greatest of Plantagenets: 1501.
      (1) Struggle with Church begun: 862; 189.
   b. Reign of King John:
      (1) Magna Charta: 1145; 616; 586.
      (2) Relations with the Pope: 974.
   c. Reign of Edward I:
      (1) New taxation for the new monarchy: 586.
      (2) Wales and Scotland conquered: 2034; 278.
      (3) Parliament becomes a representative body: 862; 1257.
   d. Reign of Edward III:
      (1) Beginning of Hundred Years' War with France: Edward III 586; Crécy 476; Calais 305; Poitiers 1512.
   e. Reign of Richard II: 1611; Henry IV 862; John of Gaunt 974; Wat Tyler 2050.

6. DESTRUCTION OF FEUDALISM: 862.
   a. Wars of the Roses — Barons against barons: 1634; Warwick 2044; Bosworth 249; Tudor 1949.
   b. Reigns of Henry VI, Edward IV and Richard III: 863; Joan of Arc 973; Cambridge 313; Edward IV 578; Richard III 1611.

7. ABSOLUTE POWER OF THE CROWN — Tudor dynasty: 1949; James IV 957.
   a. Henry VIII and founding of royal power: 863; House of York 2124.
   b. Reign of Henry VIII: 863; Catherine of Aragon 350; Anne Boleyn 238; Oxford 1405; Ireland 937; guild 812; Surrey 1851; More 1261; ship 1743.
      (1) King ruling absolutely:
      (2) England severed her connection with the pope. King becomes head of the church in England: Henry VIII 863; England 616; Edward VI 587; Tindale 1915; Wycliffe 2114.
   c. Mary and the Catholic reaction: Mary I 1180.
   d. Reign of Elizabeth:
      (1) Protestant religion was established: England 616; Elizabeth 607; Anne Boleyn 238; Mary Queen of Scots 1181; Edinburg 581; Gilbert 766; Essex 627; Ascham 117; Raleigh 1583; Walsingham 2039; Leicester 1050.
      (2) Trade, exploration and sea-power increased: London 1111; Virginia 2024; Scilly Islands 1706; Drake 549; Armada 103.

8. BEGINNINGS OF THE STUARTS — JAMES I: Stewart 1838; James I 956; England 617; Scotland 1708; Gunpowder Plot 816.

9. RISE OF THE PEOPLE'S POWER AGAINST THE KING:
   a. Reign of Charles I: 386; England 617.
      (1) Struggle between king and nation: The civil wars: Solemn League 1778; Edgehill 581; Hull 896; Long Parliament 1112; Prince Rupert 1644; Strafford 1835.
   b. The Commonwealth: Oliver Cromwell: 481; Long Parliament 1112; Marston Moor 1177; Lely 1052; William III 2086; Ireland 937; Milton 1229.
   c. Restoration of the king — reign of Charles II: 368; England 617; London 1111; the Cabal 300; Chelsea 374; Newfoundland 1341; Clarendon 404; Pennsylvania 1446.
   d. Reign of James II: 957.
      (1) Revolution against him: 617; Ireland 937; Jeffries 968; William III 2086; Marlborough 1173.
   e. Reign of William and Mary:
      (1) People gained political liberty from absolute rule of king: 2086; 617.

f. **Reign of Anne:** 75; Stuarts 1836; Marlborough 1173; Bolingbroke 238.
(1) **House of Commons becomes the ruling power:** 617.

10. **GOVERNMENT BY THE PEOPLE:**
a. **Reign of George I:** 751.
(1) **The Prime Minister and Cabinet appear:** 617; Walpole 2038; England 617.
b. **Reign of George II:** 751; Seven Years' War 1727; Walpole 2038; Saxe 1685; Oglethorpe 1373.
(1) **William Pitt, Prime Minister:** 1496; 617; Wilberforce 2083; Lady Stanhope 1810.
(2) **Power of Great Britain extended to India and North America:** 617; 920; 320; Clive 411; Tippoo Sahib 1915.
c. **Reign of George III:**
(1) **Loss of American colonies:** 751; Pitt 1495.
(2) **War with France:** 704; Napoleon 1301.
(3) **Trial of Hastings:** 847; Begums 195; Burke 291; Sheridan 1740.
(4) **Work of Nelson and Wellington:** 1319; Trafalgar 1934; Saint Vincent 1663; Nile 1351; Waterloo 2052; Peninsular War 1445; Wellington 2067; Soult 1782.
(5) **Industrial development:**
(a) **Spinning and weaving; steamengine and locomotive:** Arkwright 102; Hargreaves 838; Crompton 481; spinning 1799; steamengine 1816.
d. **Reign of William IV:**
(1) **Great Reform-Bill: William IV:** 2086; 617; Peel 1441; Wellington 2067.
e. **Reign of Victoria:** 2019.
(1) **House of Commons the ruling power in the nation:** 617
(2) **Power abroad maintained:** 617.
(3) **The Crimean War:** Crimea 478; Great Powers 800; Sebastopol 1716; Raglan 1580; Napoleon III 1302; Balaklava 159; Alma 53; Turkey 1956.
(4) **Indian Mutiny Suppressed:** Cawnpore 354; Havelock 848; Lucknow 1123; Nana Sahib 1298.
(5) **The Expansion of Greater Britain:** Africa 24; Canada 320; Australia 142; Afghanistan 22; Burma 293; Egypt and Sudan 592; New Zealand 1339.
(6) **Makers of the Empire:** Disraeli 534; Gladstone 771; Gordon 781; Roberts 1619; Rhodes 1607; Rosebery 1634; Salisbury 1665.
(7) **The Struggle for South Africa:** Boers and Boer War 234; Cape Colony 328; Jameson 958; Kruger 1013; Natal 1304; Orange River Colony 1389; Transvaal 1937.
(8) **Ireland and Home Rule:** 937; Bright 268; Balfour 160; Campbell-Bannerman 316; Dillon 532; O'Connell 1370; O'Connor 1371; Parnell 1425; Gladstone 771; Morley 1262.
f. **Reign of Edward VII:** 587.

11. **CULTURE, LEARNING AND ART DURING THE 13TH, 14TH, 15TH AND 16TH CENTURIES:**
a. **Education:**
(1) **The schools of the monasteries:** 1250; Franciscans 707; Anglo-Saxon 73; Alcuin 42; Dominicans 543.
(2) **The universities:** 1986; Oxford 1405; Cambridge 313; German 760; Heidelberg 856; Leipsic 1051; Bologna 239; Prague 1542; Salamanca 1664; Louvain 1120; Bonn 243; Montpellier 1259.
(3) **Books of the time:** 1084; 1089.
b. **Literature:** 1084; 1089.
(1) **The coming of the vernacular literatures:** Chaucer 373; Wycliffe 2114.
(2) **Troubadour and Minnesinger:** 1945; 1085; 1236; 1087.

(3) Writings of Dante and Chaucer: 501; 373.
(4) Revival of the ancient classics: 1084.
(a) Petrarch and humanism: 1462.
(b) The study of Greek: 1082.

c. Art: 112; 668. See, also, Artists in Index.
(1) Architecture: 92; Fine Arts 668-671.
(a) Romanesque: 92.
(b) Gothic — the cathedrals: 92; 670-672; Notre Dame 1422; Saint Mark's 1660; Padova 1408; Strassburg 1835; Cologne 425; Rheims 1605.
(c) Byzantine: 671.
(2) Painting of the Renaissance: 671-675; Bolognese School 239; Raphael 1507; Perugino 1458; Cimabue 399; Giotto 767.
(3) Sculpture: 1711; 670-671; Donatello 543; Ghiberti 763; Angelo 72.

d. Beginnings of Science:
(1) Inventions: 933.
(a) Gunpowder: 815.
(b) The printing-press: 1549.
(c) The compass: 435.
(d) The telescope: 1885; Copernicus 451; Bacon 154.

(II) THE PROTESTANT REVOLUTION:

1. RELIGIOUS AND SOCIAL CONDITIONS AT BEGINNING OF 16TH CENTURY: Reformation 1598; England 616; Austria 146; Huguenots 890; Italy 948.
a. Loyalty to the Catholic religion: 159.
b. The ideas of Erasmus and other learned men: 623, 1261.

2. PROTESTANT MOVEMENTS IN CENTRAL EUROPE:
a. Martin Luther: 1124.
b. How the German people took to Luther's ideas: 758.
c. The Peasants' Revolt: 758.
d. Zwingli and Calvin: 2138; 311.
e. The Catholic Reformation: 1598; 863; 1903.
(1) The Jesuits: 1122; 2117.
f. The Political struggle between Protestantism and Catholicism:
(1) Victory of Catholicism in Spain: 1968.
(2) Persecution of the Dutch: 564.
(3) Revolt of the Netherlands and Foundation of the Dutch Republic: 564; 1190; 2087; 879.
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2. **PROSE:**
   a. **History:** 1086.
      Barros, Brandao, Herculano, Lopez and Varnhagen.
   b. **Romance:** Amadis de Gaul 56.
   c. **Travel:** Mendez-Pinto 1202.

XVII. FINNIC.

1. **POETRY:**
   a. **The Kalevala:** 1086; Runeberg 1643 and 1086.

XVIII. DUTCH.

1. **POETRY:**
   a. **Epic:** Bilderdijk 1086.
   b. **Drama:** Goes 1086; Schimmel 1086; Vondel 1086.
   c. **Didactic:** Cats 1086; Helmer 1086.
2. **PROSE:**
   a. **Fiction:** Beets 1086; Dekker 1087; Lennep 1087.
   b. **History:** Hooft 1086.
   c. **Criticism, Essays and Letters:** Erasmus 623.
   d. **Science and Law:** Boerhaave 234; Grotius 1086 and 1058 (Law); Huygens 902.
   e. **Philosophy and Religion:** Kempis 996; Spinoza 1799; 1086; 1081.

XIX. SCANDINAVIAN.

1. **GENERAL REFERENCES:** 1087; Northmen 1359; mythology 1294; Balder 160; Odin 1372; Sigurd 1756; Thor 1906; Valhalla 1999; 2035; Denmark 520; Iceland 911; Norway 1361; Sweden 1854.
2. **DANISH:**
   a. **Poetry:** 1509; Baggesen 1087; Evald 1087; Holberg 1087; Oehlenschlaeger 1087; Vedel 1087.
   b. **Prose:** Andersen 69; Brandes 260.
3. **NORSE:**
   a. **Poetry:** Björnson 221; Boyesen 254; Edda 581, 1087; Ibsen 909; Jansen 1087; Wergeland 1087.
   b. **Prose:** Björnson 221; Edda 581, 1087; Garborg 1087; Lie 1087; Nansen 1299.
4. **SWEDISH:**
   a. **Poetry:** Atterbohm 1087; Bellman 1087; Borgesson 1087; Franzen 1087; King Oscar II 1396; Runeberg 1643; Stagnelius 1087; Stjernhjelm 1087.
   b. **Prose:** Bremer 263; Carlen 1087; Geiger 742; Linné 1077; Rydberg 1087; Nordenskjöld 1354; Schwartz 1087; Swedenborg 1855.

XX. GERMAN.

1. **THE MEDIEVAL PERIOD:**
   a. **Charlemagne's collections of poems:** 368; 1087.
   b. **Die Minnesinger (singers of love) and their poetry:** 1236; 1087; Walther von der Vogelweide 2039.
   c. **Das Nibelungen Lied ("The Lay of the Nibelungs"):** 1347; 1987; Wagner 2032; Goetterdaemmerung 785; Rheingold 1606; Sigurd 1756; Valhalla 1999, 2035.
   d. **Birth of German drama in mystery and passion-plays:** Miracle-Plays 1238; Oberammergau 1368; 1087; Reynard the Fox 1604.
   e. **The language:** German 759; Platt-Deutsch 1503.
2. **THE MODERN PERIOD:**
   a. **Luther and the German Bible:** 1124; 1087; 759; German Bible 210; Melanchthon 1199; Ulrich von Hutten 1087; Zwingli 2138.
   b. **Poetry:**
      (1) **Epic:** Klopstock 1007.
      (2) **Drama:** Lessing 1058; Goethe 777; Arnim 109; Egmont 589; Faust 650; Iphigenia 936; Mephistopheles 1205; Schiller 1688; Tell 1886; Wallenstein 2037.
      (3) **Lyric:** Gerhardt 755; Heine 858; Lorelei 1115; Uhland 1964; Wieland 2082.

c. **Prose:**

(1) **Fiction:** 1088; legend 1048; novel 1363; mythology 1294; romance 1628; Auerbach 136; Ebers 577; Freitag 718; Grimm 806; Munchausen 1277; Reuter 1604; Platt-Deutsch 1503.

(2) **Belles-Lettres: (Criticisms, Essays, Humor):** 1088; Lessing 1058; Richter 1612; Schlegel 1689.

(3) **History:** 1088; Baur 183; Curtius 489; Doellinger 541; Mommsen 1249; Niebuhr 1349; Strauss 1836.

(4) **Philosophy:** 1087; 1472; Kant 992; Fichte 659; Schelling 1688; Herbart 866; Hegel 857; Schopenhauer 1704; Lotze 1116; Leibniz 1050.

(5) **Science:** 1088; Bunsen 289; Haeckel 822; Helmholtz 860; Hertz 870; Humboldt 890; Lassalle 1033; Liebig 1066; Marx 1180; Ritter 1617; Roentgen 1624; Schliemann 1689; Vogt 2026; Weissmann 2065.

(6) **Theology:** Herder 867; Ritschl 1617; Schleiermacher 1689.

XXI. FRENCH.

1. **THE MEDIEVAL PERIOD:**

a. **Earliest Poetry:** Roland 1625; Provencal 1554.

b. **The Troubadours:** 1944, 1085.

c. **Froissart and Commines:** 720; 1085.

2. **THE MODERN PERIOD:**

a. **Poetry:**

(1) **Drama:** Bergerac 202; Corneille 398, 457 (Cid); Racine 1578; Molière 1248; Beaumarchais 187; Hugo 895; Sardou 1680; Rostand 202.

(2) **Lyric:** Béranger 201; Hugo 895; Lamartine 1023; Leconte de Lisle 1045; Musset 1292; Marseillaise 1176.

b. **Prose:**

(1) **Fiction:** Margaret of Navarre 1170; La Fontaine 1021; Le-Sage 1057; Perrault 1454; Mother Goose 1270; Saint-Pierre 1662; Daudet 506; Dumas 560; Hugo 895; 1999 Valjean; Sand 1673; Sue 1843; Verne 2014; Vigny 1085; Balzac 165; Bourget 252; Gautier 741; Maupassant 1085; Zola 2133.

(2) **Belles-Lettres (Criticism, Essays, Wit):** Academy 6; French 716; Institute 930; Rabelais 1577; Montaigne 1254; essay 626; Boileau 236; La Rochefoucauld 1032; Saint-Simon 1663; Sévigné 1729; letters 1058; Recamier 1592; Madam de Stael 1807; Remusat 1600; Sainte-Beuve 1663; Taine 1865; Girardin 768.

(3) **History and Biography:** D'Aubigne 505; Blanc 226; Guizot 813; Michelet 1218; Napoleon III 1902; Renan 1601; Rollin 1625; Thierry 1085; Thiers 1902; Tocqueville 1919; Voltaire 2029.

(4) **Philosophy:** 1472; 1085; Descartes 522; Cousin 468; Comte 438; science 1706.

(5) **Science (including, also, economics, education and law):** Descartes 522; Pascal 1427; Montesquieu 1256; Hennepin 862; Rousseau 1638; interest 931; D'Alembert 497; Diderot 530; encyclopedia 614; Buffon 286; Cuvier 491; Bastiat 179; Flammarion 680; Fourier 702; Laboulaye 1016; Laplace 1030; Lavoisier 1037; Lenormant 1053; Legendre 1049; Leverrier 1060; Mascart 1183; Pasteur 1427; Réclus 1594; Saint-Hilaire 1657; Saint-Simon 1662.

(6) **Theology:** 1085; Calvin 311: Fénelon 654; Massillon 1187; Pascal 1427; Chateaubriand 372.

XXII. CELTIC (IN ENGLISH).

1. **PROSE:**

a. **Malory:** 1152.

2. **POETRY:**
   a. **King Arthur, the Holy Grail and the Table Round:** Arthur 114; Grail 790; Idyls of the King 913; Round Table 1638; Tennyson 1891; Bellicent 198; Camelot 314; Excalibur 640; Galahad 729; Ivaine 949; Launfal 1035; Lohengrin 1109; Merlin 1207; Parsifal 2033; Tristram 1943.
   b. **Ossian:** 1397.

3. **MYTHOLOGY:** 1294; Druids 554; Fairy 646; Fenians 654; Mab 1129; Madoc 1142; Puck 1559.

4. **CELTS:** 357; legend 1049; romance 1628.

XXIII. ENGLISH.

GENERAL REFERENCES: 1088-92; England 615; English language 617; Great Britain 728; languages 1028; Ireland 937; Saxons 1685; Scotland 1708; Wales 2034. See, also, Celtic Literature.

1. **EARLIEST WRITINGS:** Alfred 47; alliteration 53; Anglo-Saxon 73; Roger Bacon 154; ballad 161; Bede 190; Beowulf 201; Cædmon 302; Caxton 354; *Domesday Book* 542; English 618; Robin Hood 884.

2. **THE FOURTEENTH CENTURY:**
   a. **Chaucer:** 373; 1088; Becket 189; Canterbury 326; English 618; influence of Italian and French literature 1088; *Assembly of Fowls* and *Canterbury Tales* 373; 1088; 618.
   b. **Wiclif:** 2114; 1088; Bible 210; Vulgate 2030.

3. **THE FIFTEENTH CENTURY:** 1088; Malory 1152; Round Table 1638; Caxton 354.

4. **THE SIXTEENTH CENTURY—RENASCENCE AND ELIZABETHAN AGE:**
   a. **General References:** 1088-9; drama 550; Elizabeth 611; Bible 210; Coverdale 469; Tindale 1915; essay 626; poetry 1509; sonnet 1781.
   b. **Birth of English Drama:** 1089; Marlowe 1174; Shakespeare 1733.
   c. **Poetry:** 1088; 618.
      (1) **Spenser:** 1796; 1088.
      (2) **Shakespeare:** 1733; 1089; sonnet 1781; *As you Like It* 129; *Hamlet* 831; *King Lear* 1004; *Macbeth* 1130; *Merchant of Venice* 1206; *Midsummer Night's Dream* 1222; *Othello* 1399; Portia 1531; *Romeo and Juliet* 1630; *The Tempest* 1886; *The Winter's Tale* 2097; Stratford-on-Avon 1836.
      (3) **Other Poets:** Beaumont 187; Daniel 1088; Drayton 1088; Fletcher 1089; Greene 1089; Jonson 978, 1089; Peele 1089; Surrey 1851; Sackville 1088; Sidney 1752; Watson 1089, 2055; Wyatt 2114.
   d. **Prose:** Ascham 117; Bacon 154; essay 626; 1089; philosophy 1472; W. Gilbert 766; Hakluyt 825; Hooker 884; Knox 1008; Lyly 1089; Thomas More 1261; 1088; *Utopia* 1996; Raleigh 1583; Sidney 1752; Tindale 1915.

5. **THE SEVENTEENTH CENTURY:**
   a. **Poetry:** 1089; poetry 1509; sonnet 1781; Milton 1228; *Comus* 438; *Paradise Lost* 1418; Puritans 1564; Dryden 555; Cowley 469; Herbert 867; Lovelace 1089; Waller 1089.
   b. **Prose:**
      (1) **General References:** 1089; legend 1048; novel 1363; philosophy 1471; romance 1628; science 1706.
      (2) **Authors:** Baxter 184; Bunyan 290; *Pilgrim's Progress* 1490; Clarendon 404; Hobbes 1089; Leighton 1051; Locke 1106; Newton 1344; Penn 1446; Pepys 1451; Jeremy Taylor 1876; Walton 2040.

6. **THE EIGHTEENTH CENTURY (the Queen Anne Age and the Georgian Era):**
   a. **Poetry:** Pope 1527; Akenside 35; Burns 293; Collins 425; Cowper 470; Gay 741; Goldsmith 778; *Vicar of Wakefield* 2018; Johnson 976;

Hannah More 1261; Ossian 1397; Sheridan 1740; Thomson 1906; Toplady 1924; Watts 2057; Charles Wesley 2068; Young 2125.

b. **Prose:**

(1) **Essays:** 626; 1090; Addison 12; Coverley 469; Steele 1820.

(2) **Fiction:** 1090; novel 1363; romance 1628; Defoe 515; Fielding 660; Richardson 1611; Smollet 1772; Sterne 1824; Swift 1856; Brobdingnag 272; Lilliput 1071.

(3) **History:** 1090; 876; Gibbon 764; Hume 897; Robertson 1090.

(4) **Letters:** 1058; Chesterfield 378; Junius 982; Lady Montague 1254; Walpole 2038.

(5) **Oratory:** Burke 291; Chatham 1495; Curran 487: Erskine 625.

(6) **Philosophy, Religion and Science:** 1090; Berkeley 203; Blackstone 223; Butler 1090; Doddridge 537; Paine 1409; Reid 1599; Adam Smith 1769.

7. **THE NINETEENTH CENTURY:** 1090-2:

a. **Poetry:** 1090; Austin 141; Wm. Blake 226; Browning 276; Buchanan 282; Byron 298; Campbell 316; Coleridge 429; *Ancient Mariner* 69; Crabbe 472; Hood 884; Aram 89; Heber 857; Hemans 860; Hunt 899; Keats 994; Keble 994; Landor 1025; Lytton 1128; Matthew Arnold 110; Marston 1177; Moore 1260; *Last Rose of Summer* 1033; Morris 1265; Edwin Arnold 110; Patmore 1429; Procter 1551; Rogers 1624; Rosetti 1635; Scott 1709; *Lady of the Lake* 1020; *Lay of the Last Minstrel* 1040; Lochinvar 1105; Marmion 1174; Rob Roy 1620; Shaw 1735; Shelley 1738; Cenci 358; Sladen 1765; Southey 1787; Madoc 1142; Swinburne 1856; Tennyson 1891; *Grail* 790; *Idyls* 913; *Merlin* 1207; *The Princess* 1548; *Round Table* 1638; Tupper 1952; William Watson 2055; Kirke White 2078; Charles Wolfe 2103.

b. **Prose:**

(1) **Fiction:** 1091-2; Aguilar 33; Austen 141; Barrie 175; Bayley 1125 *(Lyall);* Besant 207; Black 221; Blackmore 223; Boothby 246; Bronte 272; Dr. Brown 275; *Marjorie Fleming* 1152; T. A. Browne 276; Bulwer 288; Caine 304; Corelli 445; Cotes 463; Dinah Mulock Craik 472; Crockett 479; Churchill 307; Cross 452; Dickens 529; *Bleak House* 226; *Christmas Carol* 395; *The Cricket* 478; *David Copperfield* 452; *Great Expectations* 799; *Old Curiosity Shop* 1328; *Oliver Twist* 1380; *Our Mutual Friend* 1401; *Pickwick Papers* 1438; Disraeli 534; George Eliot 606; *Romola* 1630; *Silas Marner* 1756; Farjeon 648; C. W. Gordon 782; Haggard 823; Harraden 842; Hardy 837; Hawkins 850; Hewlett 871; Henty 865; Hughes 894; Ingelow 927; Kingsley 1005; Hypatia 996; Kipling 1006; Le Gallienne 1049; Lever 1059; Mitford 1243; Macdonald 1134; Marryat 1176; Meredith 1206; Mille 519; Gilbert Parker 1423; Jane Porter 1531; Reade 1589; Ramée 1584; Quiller-Couch 1574; Clark Russell 1645; Leigh Richmond 1612; Olive Schreiner 1704; Scott 1709; *Bride of Lammermoor* 265; *Ivanhoe* 949; *Kenilworth* 996; *Rob Roy* 1620; *The Talisman* 1867; Stevenson 1825; Thackeray 1897; Mrs. Ward 2041; Warren 2043; John Watson 2055; Weyman 2072; Yonge 2123; Zangwill 2129.

(2) **History and Biography:** 1091; 876; Allison 50; Arnold (Thos.) 110; Bourinot 253; Bruce 281; Buckle 1091; Carlyle 1130; Collingwood 1091; Cox 471; Creasy 1091; Creighton 1091; Cromer 480; Curzon 489; Forster 1091; Freeman 712; Froude 721; Gardiner 736; Greene 802; Grote 807; Hallam 827; Harrison 844; Lecky 1044; Lyall 1091; Macaulay 1130; Maine 1151; Martineau 1179; May 1091; Merivale 1207; McCarthy 1131; Milman 1228; Napier 1300; Norman 1356; Palgrave 1091; Paul 1091; Petrie 1462; Pollock 1091; Prothero 1553: Rawlinson 1589; Rosebery 1634; Rowton 1091; Sayce 1686; Seeley 1718; Goldwin Smith 1770; Stan-

hope 1810; Dean Stanley 1810; Stubbs 1839; Symonds 1859; Traill 1934; Trevelyan 1091; Sharon Turner 1958.

(3) **Essays and Criticism:** 1090-2; C. G. Allen 51; M. Arnold 110; Birrel 1092; Blouet 230; Brooke 1091; Carlyle 336; Brougham 274; Cobb 416; De Quincey 522; De Vere 1092; Dobson 1092; Dowden 547; Gladstone 771; Hamerton 830; Howitt 893; Hunt 899; Hutton 1091; Lamb 1023; Sidney Lee 1048; Mackintosh 1090; Mallock 1152; Morley 1262; Pater 1092; Pattison 1092; *Punch* 1561; Ruskin 1644; *King of the Golden River* 1003; Saintsbury 1091; Smiles 1769; Sydney Smith 1771; Stead 1815; Leslie Stephen 1091; John Wilson 2092.

(4) **Science (including, also, economics, philology, jurisprudence and medicine):** 1091-2; Bagehot 157; S. W. Baker 158; Ball 161; Brewster 265; Clerk-Maxwell 1192; Buckland 283; Darwin 505; Davy 509; Dawson 509; Drummond 555; Faraday 648; Galton 731; Geikie 742; Kelvin 996; Kidd 1091; Layard 1040; Livingstone 1103; Lodge 1107; Lubbock 1122; Lyell 1126; Malthus 1153; Hugh Miller 1227; Mivart 1243; Murchison 1280; Osler 1397; Playfair 1504; Proctor 1551; Ramsay 1585; Rayleigh 1589; Ricardo 1610; Romanes 1628; Salisbury 1665; Selous 1721; Seton 1727; Somerville 1780; Speke 1795; H. M. Stanley 1811; Stewart 1826; Sterling 1827; Tait 1886; Tylor 1961; Tyndall 1961; Daniel Wilson 2091.

(5) **Philosophy and Theology (including Works on Relations of Religion and Science):** 1091-2; 1471; Balfour 160; Caird 1091; Chalmers 363; Chambers 363; Fairbairn 645; Farrar 649; Flint 1091; Gore 1091; Hall 827; Hamilton 831; Lewes 1060; Liddon 1066; Manning 1161; Mansel 1091; Martineau 1179; Maurice 1091; Mill 1226; Muller (Max) 1276; Newman 1343; Pusey 1564; Robertson 1620; Spurgeon 1806; Trench 1941; Tulloch 1950; John Wesley 2068; Westcott 2069; Whately 2073; Whitefield 2078.

XXIV. CANADIAN.

G. M. Adam 10; W. J. Alexander 45; Grant Allen 51; H. M. Ami 64; Bourinot 253; George Bryce 281; Cotes 463; J. B. Crozier 482; W. H. Drummond 555; W. A. Fraser 710; Fréchette 711; C. W. Gordon 582; G. M. Grant 792; Haliburton 826; Hannay 834; Hughes 894; Maclaren 1139; Marchand 1168; Mille 519; O'Brien 1369; Gilbert Parker 1423; Selwyn 1721; Seton 1727; Shanly 1734; Daniel Wilson 2091; R. R. Wright 2112.

XXV. AMERICAN.

1. **THE COLONIAL PERIOD (1607-1783):**

a. **Poetry:** Barlow 1093; Eliot 606; 1092; Hopkinson 1093; *Hail Columbia* 824; Trumbull 1093; *Yankee Doodle* 2120; 1093.

b. **Prose:**

(1) **History:** Berkeley 1092; Bradford 256; 1092; Byrd 1092; Captain John Smith 1770; 1092; Pocahontas 1509; Stith 1092; Winthrop 2097; 1092.

(2) **Religious Writings:** Cotton 465; Mather 1188; 1092; Woolman 1093; Quakers 1570.

(3) **Philosophy:** Edwards 588; 1092; Franklin 708; 1093.

(4) **Political Writing and Oratory:** 1092-3; Adams (Sam.) 12; 1093; Hastings 1093; Henry 865; 1093; Jefferson 967, 1093; *Declaration of Independence* 513; Lee (R. H.) 1046; 1093; Warren (J.) 2043; 1093.

2. **THE NATIONAL PERIOD (1783-):**

a. **The Rise of National Literature (1783-1860):**

(1) **Poetry (in order of time):** Freneau 1093; Key 1000, 1093; *Star Spangled Banner* 1812; Mrs. Sigourney 1756; Bryant 280; 1095; Drake 550; 1093; Woodworth 1094; Wilde 1094; Halleck 1093; Greene 1094; Payne 1432, 1094; *Home, Sweet*

Home 883; Willis 2089; 1095; Smith (S. F.) 1770; *America* 62; Longfellow 1112; 1094; *Evangeline* 625; *Hiawatha* 871; Standish 1809; Whittier 2081; *Snowbound* 1774; 1095; Holmes 880; 1094; Poe 1509; *The Raven* 1588; 1095; Lowell 1121; 1094; *Launfal* 1035; Whitman 2079; 1095; Boker 237; Read 1589; 1095; Foster 702; *My Old Kentucky Home* 1294; Alice and Phœbe Cary 344; Larcom 1031; 1097; R. H. Stoddard 1830.

(2) **Prose (writers chronologically arranged):**

(a) **Fiction:** Brown (C. B.) 274; Cooper 450; *Last of the Mohicans* 1033; *Leatherstocking Tales* 1043; 1094; Irving 943; *Ichabod Crane* 911; 1093; *Rip Van Winkle* 1617; Miss Sedgwick 1717; Mrs. Child 384; Goodrich 780; Hawthorne 851, 1094; *Grandfather's Chair; Marble Faun* 1168; Simms 1759; Mrs. Stowe 1834; 1095; Susan Warner 2042; 1097; Mrs. Whitney 1097; Trowbridge 1945; 1097; W. T. Adams 12.

(b) **Belles-Lettres (Criticism, Essays, Humor):** 1093-5; Channing 367; 1094; R. H. Dana 500; Ticknor 1910; Bulfinch 288; Emerson 612; 1094; Margaret Fuller 722; Tuckerman 1949; Shillaber 1742; Thoreau 1906; 1094; R. G. White 2078; D. G. Mitchell 1242; G. W. Curtis 489, 1097; Bayard Taylor 1875; Browne *(Artemus Ward)* 276; William Winter 2097.

(c) **History and Biography:** 1093-5; Wirt 2098; Ramsay 1585; Benton 201; Sparks 1791; Prescott 1544; 1094; Wise 2101; Bancroft 165; 1094; Hildreth 873; Thompson 1905; G. T. Curtis 489; S. W. Williams 2089; Henry Wilson 2091; Headley 853; Lossing 1116; 1095; Motley 1271; 1094; Parton 1426; 1098; Parkman 1424; 1095; Lea 1040; Fisher 677; M. C. Tyler 1961; 1098.

(d) **Oratory and Political Writing:** 1093-5; Pelatiah Webster 2064; Washington 2047; Jay 966; 1093; Dane 501; Ordinance of 1787 p. 1391; Alexander Hamilton 830; *The Federalist* 830, 966; 1519; Madison 1142; 1093; Fisher Ames 63; 1093; Monroe 1253; Gallatin 730; Clay 496; 1094; Calhoun 307; 1094; Daniel Webster 2062; 1094; Hayne 852; Everett 636; 1094; Weed 2064; Choate 393; 1094; Garrison 738; 1095; Greeley 801; Phillips 1471; 1095; Sumner 1847; 1095; Douglass 546; C. A. Dana 499; Poore 1527; Nordhoff 1355.

(e) **Philosophy and Religion:** 1093-5; Boudinot 251; Dwight 565; Leonard Bacon 154; Lyman Beecher 193; Alexander Campbell 316; Wayland 2060; Muhlenberg 1275; Bronson Alcott 42; Mark Hopkins 885; Ray Palmer 1413; Freeman Clarke 405; Theodore Parker 1423; Bowen 253; McCosh 1133; Peabody 1432; Noah Porter 1531; Henry Ward Beecher 193; H. R. Smith 1770; Storrs 1834; Collyer 425; Brace 255; Morgan Dix 537; W. T. Harris 843.

(f) **Science (including economics, jurisprudence and philology):** 1093-5; Murray 1281; Rush 1644; Noah Webster 2063; Marshall 1177; Kent 997; Alexander Wilson 2091; Story 1834; Audubon 135; Worcester 2109; Carey 334; Schoolcraft 1690; Walker (A.) 2035; Marsh 1177; Dix 536; Bache 153; Louis Agassiz 25; Guyot 817; Bar-

nard 173; Maury 1191; J. D. Dana 500; R. H. Dana, Jr., 500; Kane 988; Squier 1806; Baird 158; Chadbourne 362; Cooley 449; Winchell 2093; W. D. Whitney 2081; Wells 2067; Terhune 1892; I. I. Hayes 852.

b. **The Maturity of American Literature (1860-1909):**

(1) **Poetry:** 1095-8; Leland 1052; Emily Dickinson 530; Stedman 1819; 1097; Aldrich 43; 1097; Butterworth 297; Randall 1586; *Maryland, my Maryland* 1182; Joaquin Miller 1227; Lanier 1028; Gilder 766; 1097; Carleton 334; Fawcett 651; 1097; Bates 181; Field 659; Markham 1173; Riley 1615; Wilcox 2083; Carman 336; Dunbar 561; *The Battle Hymn of the Republic* 183; Mrs. Howe 892.

(2) **Prose:**

(a) **Fiction (authors in order of time):** 1095-8; Holland 879; 1097; Hale 826; 1095; *Man Without a Country* 1165; R. M. Johnston 977; 1096; Lew Wallace 2036; 1098; Weir Mitchell 1243; 1096; Mrs. Barr 174; Mrs. Davis 508; Helen Hunt Jackson 953 and 1097; Stockton 1829 and 1905; Mrs. Spofford 1800; 1097; Howells 892; 1097; Eggleston (E.) 589; 1095; M. M. Dodge 538; Tourgee 1928; G. C. Eggleston 1098; Bret Harte 845; 1095; Habberton 820; Henry James 958; 1097; Mrs. Phelps—Ward 1465; 1097; Maurice Thompson 1096; G. W. Cable 300; 1097; Mrs. Burton Harrison 844; 1097; Julian Hawthorne 851; 1097; Mrs. Catherwood 1096; Mrs. Foote 692; Westcott 1097; Joel Chandler Harris 842; P. H. Hayne 1097; James Lane Allen 52; 1097; Bellamy 198; Miss French 714; 1097; Miss Murfree 1280; 1097; Lathrop 1034; Goss 1097; Hastings 1097; Robert Grant 1098; Thos. Nelson Page 1408; Marion Crawford 474; 1097; Major 1096; Mrs. Atherton 1097; Mrs. Deland 516; Mrs. Riggs 1615; 1097; Bacheller 1097; Wister 2101; Garland 737; 1097; 1098; Mrs. Wilkins-Freeman 712; 1097; Amelie Rives 1617; R. H. Davis 508; Ford 1096 G. B. McCutcheon 1134; Mrs. Craigie 472; Naylor 1097; Tarkington 1871; 1098; Churchill 397; Crane 473; 1097; Jack London 1112.

(b) **Belles-Lettres (Criticism, Essays, Humor):** 1095-8; H. W. Shaw 1735; Higginson 873; Norton 1361; Mrs. Croly 480; Mrs. Miller 1227; Clemens 408, 1095; Burroughs 295; Scudder 1711, 1098; C. W. Stoddard 1830; Burdette 290; Mabie 1129; Brander Matthews 1189; Van Dyke 2003; Bangs 163; Ade 13; Dunne 562; Hapgood 836.

(c) **History (including Biography and Autobiography):** 1095-8; Jefferson Davis 507; A. W. Stephens 1822; 1095; Sherman 1741; Curry 488; U. S. Grant 793; J. D. Cox 471; O. O. Howard 892; P. H. Sheridan 1739; Winsor 2097; 1098; H. H. Bancroft 166; Nicolay 1095; A. D. White 2077; Hurst 901; C. K. Adams 10; Foster 701; Henry Adams 10; Hay 851; 1095; Schouler 1095; Mahan 1148; 1095; Morse 1098; Holst 881; Fiske 678; 1098; Andrews 71; 1095; Rhodes 1098; H. B. Adams 10; Lodge 1107; 1098; Sloane 1767; 1098; McMaster 1140; 1098; Hart 1095; B. I. Wheeler 2075; Woodrow Wilson 2092; Tarbell 1871; Roosevelt 1631; 1098.

(d) **Oratory and Political Writing:** 1095-8; Lincoln 1073-5; 1094; Mrs. Livermore 1102; Cox (S. S.) 471; Schurz 1705; 1098; Halsted 829; Blaine 224; Miss Dodge 538; Ingalls 926; Ingersoll 926; Watterson 2057; Reid 1599; Beveridge 208; Bryan 280.

(e) **Philosophy and Religion (authors arranged chronologically):** Cardinal Gibbons 764; Lyman Abbott 1; Phillips Brooks 273; Gladden 770; Archbishop Ireland 938; Bishop Spalding 1789; Ladd 1019; Parkhurst 1424; Patton 1430; Barrows 175; Adler 14; Schurman 1705; Gunsaulus 816; Hillis 874.

(f) **Science (also including economics, jurisprudence, philology and sociology):** Bascom 177; Hammond 832; Gildersleeve 766; Gilman 767; Eliot 606; Langley 1026; Powell 1541; Newcomb 1341; Flint 682; Brinton 268; Muir 1275; Henry George 752; Packard 1407; Cope 451; F. A. Walker 2035; Wright 2112; Holmes 881; Shaler 1733; Coues 465; William James 958; Kennan 997; G. S. Hall 827; S. E. Tillman 1913; Riis 1615; Coulter 466; Zahm 2128; Ely 610; E. J. James 956; Hadley 822; W. R. Harper 841; Peary 1436; Peck 1437; Albert Shaw 1735; Baldwin 160; N. M. Butler 295; Muensterberg 1274.

XXVI. AUTHORS OF OTHER LITERATURES.

Carmen Sylva (Queen Elizabeth) of Roumania: 607; *Dora d' Istria* (Princess Koltsof-Masalski) of Roumania 1010; Gorki of Russia 783; Huss of Bohemia 901; Ixtlilxochitl of Mexico 951; Kossuth of Hungary 1012; Maeterlinck of Belgium 1143; Nordau of Hungary 1354; Sienkiewicz of Poland 1753; Tolstoi of Russia 1921; Turgeney of Russia 1954; Vambéry of Hungary 2000; Ulfilas of the Goths 1964; Goths 785.

XXVII. YOUNG FOLK'S LITERATURE.

1. BOOKS FOR EARLY CHILDHOOD: 1098.

(The figures denote the pages where the subjects or authors are discussed.)

Andersen 69: *Fairy Tales.*
Baldwin: *The Story of Roland* 1625; *The Story of Siegfried* 1758; *The Story of Troy* 1945.
Church: *Stories from Herodotus* 868; *Stories from The Iliad* 882; *Stories from The Odyssey* 1965.
Eugene Field 659: *Poems* and *Stories.*
Greene: *King Arthur* 114.
Grimm 806: *Fairy Tales.*
Hawthorne, N. 851: *Tanglewood Tales* and *The Wonder-Book.*
Kingsley 1005: *Greek Heroes.*
Kipling 1006: *Puck of Pook's Hill* and *Wee Willie Winkie.*
Lanier 1028: *The Boys' King Arthur.*
Lowell: *Jason's Quest* 95; 965.
Longfellow 1112: *Hiawatha* 871.
Mabie 1129: *Norse Stories* 1295.
Mother Goose 1270; 1454.
Peabody: *Old Greek Folk-Stories* 1295.
R. L. Stevenson 1825: *Book of Poems.*
The Bible 209; Stories.

2. BOOKS FOR LATER CHILDHOOD: 1099.

a. Fiction and Poetry:

Addison 12: *Sir Roger de Coverley* 469.
Aldrich 43: *The Story of a Bad Boy.*
Arabian Nights' Tales 1084.
Andrews: *Ten Boys.*
Robert Browning 276: *The Pied Piper* and *How They Brought the Good News.*
Bunyan 290: *The Pilgrim's Progress* 1490.

Mrs. Burnett 293: *Little Lord Fauntleroy.*
Cervantes 361: *Don Quixote.*
Clemens 408: *Huckleberry Finn* and *Tom Sawyer.*
Cooper 450: *The Last of the Mohicans* 1033.
Defoe 515: *Robinson Crusoe.*
Dodgson 538: *Alice's Adventures* and *Through the Looking Glass.*
George Eliot 606: *Silas Marner* 1756.
Goldsmith 778: *The Deserted Village* and *The Vicar of Wakefield* 2018.
Hughes 894: *Tom Brown's School-days.*
Irving 943: *Sketches* and *Tales of a Traveler.*
Kingsley: *The Water-Babies.*
Lamb 1023: *Tales from Shakespeare.*
Macaulay 1130: *Lays of Ancient Rome* 1620.
Masson: *Little Masterpieces. Peasant and Prince.*
Pyle 1565: *Adventures of Robin Hood* 884.
Ramee 1584: *A Dog of Flanders* and *The Nurnberg Stove.*
Ruskin 1644: *The King of the Golden River* 1003.
Scott 1709: *Ivanhoe* 949; *The Lady of the Lake* 1020; *Rob Roy* 1620; *Tales of a Grandfather.*
Anna Sewall: *Black Beauty.*
Shakspere 1733: *The Merchant of Venice* 1206.
Stevenson: *Treasure Island.*
Swift 1856: *Gulliver's Travels* 272; 1071.
Thackeray 1897: *The Rose and the Ring.*
Warner 2042: *Being a Boy.*
J. R. Wyss: *Swiss Family Robinson.*

b. Heroes and Stories of the Nations:

Dickens 629: *A Child's History of England* 615.
Franklin 708: *Autobiography.*
Guerber: *The Story of the English* 618.
Higginson 873: *Young People's History of the United States* 1967; 86.
Lives: Alfred the Great 47.
Alexander the Great 44.
Julius Cæsar 303.
Oliver Cromwell 481.
Daniel Boone 244.
Kit Carson 342.
Robert La Salle 1032.
Abraham Lincoln 1073.
William Penn 1446.
Peter the Great 1459.
Captain John Smith 1770.
Miles Standish 1809 and others of peculiar interest to children.
Plutarch 1506: *Lives of Famous Men.*
Scudder 1711: *Life of Washington* 2047.

c. Travel and Adventure: 1099.

Samuel Champlain 365.
Captain Cook 449.
Christopher Columbus 430.
Fernando de Soto 523.
Francis Drake 549.
John C. Fremont 713.
Vasco da Gama 732.
Sven Hedin 857.
David Livingstone 1103.
Lewis and Clark 1060.
Ferdinand Magellan 1144.
Fridtjof Nansen 1299.
H. M. Stanley 1810.

d. Stories from Nature: 1099; 1307; 1309.

Ball 161: *Starland* 1813.
Burroughs 295: *Birds and Bees* 190; 217; *Squirrels* 1806.
Higginson 873: *Three Outdoor Papers.*
Keyser: *Bird-Land* 217.
Kingsley: *Madam How* and *Lady Why* and *Town-Geology.* 1099.
Lowell 1121: *A Good Word for Winter.*
Mathews: *Familiar Flowers.* 1099.
Olive Thorne Miller 1227: *First Book of Birds* and *Birds Through an Opera-Glass.*
Pearson: *Stories of Bird-Life.* 1099.
Seton 1727: *Krag and Johnny Bear.*
Thoreau 1906: *Walden.*
Torrey: *The Footpath Way.* 1099.
Wheelock: *Nestlings in Forest and Marsh.* 1099.
White (Gilbert): *Natural History of Selborne.* 1099.

3. IMPORTANCE OF LITERATURE FOR THE YOUNG: 1099.

4. METHODS OF TEACHING: 1099; 1100.

5. ENGLISH CLASSICS IN THE SCHOOLS: 1100.

Matthew Arnold 110; *Sohrab and Rustum.*
Hawthorne: *Tales of the White Hills* 2079.
Irving: *Rip Van Winkle* and *Sleepy Hollow* 911.
Longfellow: *Courtship of Miles Standish* 42; 1809.
Lowell: *The Vision of Sir Launfal* 1035.
Motley 1271: *Peter the Great.*
Schurz 1705: *Abraham Lincoln* 1073.
Scott: *Marmion* 1104.
Shakspere: *Julius Cæsar* 303.
Daniel Webster 2062: *Bunker Hill Speech* 289.
Whittier 2081: *Snowbound* 1774.

6. **IMPROVED METHOD OF INTERPRETING LITERATURE:** 1100.

7. **PERIODICAL LITERATURE:** 1100.

8. **THE OPPORTUNITY OF THE HOME:** 1100.

9. **BOOKS ABOUT BOOKS FOR CHILDREN:** 1100.

Baldwin: *The Book-Lover.*
Chubb: *The Study and Teaching of English.*
Clark: *How to Teach Reading.*
Dye: *The Story-Teller's Art.*
Lowell: *Books and Reading.*
McMurry: *Oral Work with Stories; Special Method in Primary Reading; Special Method in Reading English Classics.*
Thacher: *The Listening Child.*
Van Dyke: *Counsel on Reading.*
Wiltse: *The Place of the Story in Early Education.*

1. **PROPERTIES OF MATTER:** Physics 1482; science 1706; force 692; conservation 445; perpetual motion 1454.

2. **MECHANICS OF SOLIDS:** 1196; 1814.
   - a. **Fundamental units of measurement standards:** 1195; 1213; 570.
   - b. **Gravitation:** 796; 1184.
   - c. **Acceleration:** dynamics 566; inertia 925.
   - d. **Laws of motion:** dynamics 567; least action 1042; centrifugal force 360; simple harmonic 1759.
   - e. **Machines:** Wheel 2074; windmill 2093; screw propeller 1711; pump 1561; lathe 1034.
     1. **Lever:** 1059.
     2. **Pulley:** 1560; 228.
     3. **Inclined plane:** 917.
     4. **The Pendulum:** 1144.
     5. **General law of machines:** 567.

3. **MECHANICS OF FLUIDS:** 903; 2025; 1851.
   - a. **Pressure in liquids due to gravity:** pressure 1546; water-wheel 2053; siphon 1761.
   - b. **Pressure due to externally applied force:** manometer 116; hydraulic motor 903; elevator 605.
   - c. **Pascal's experiment:** 174.
   - d. **Specific gravity:** 521.
   - e. **The hydrometer:** 906.

4. **MECHANICS OF GASES:** 1508; 946; 438; 1078.
   - a. **Pressure of atmosphere:** 33; 72.
   - b. **Barometers:** 174.
   - c. **Boyle's law:** 255.
   - d. **Diving bells:** 536.
   - e. **Balloons and airships:** 18.
   - f. **Airpump:** 34; 1997.

5. **MOLECULAR MOTION:**
   - a. **Relative motion of molecules:** Wave motion 2058; simple harmonic motion 1759.
   - b. **Vapor pressure:**
     1. **Dew point:** 526.
     2. **Humidity:** 2051; 412; 1582.
     3. **Evaporation:** 636.
   - c. **Temperature:** 1886; heat 855; thermometer 1900; pyrometer 1567.
   - d. **Elasticity:** 593; testing machines 1894; Hooke's law 884.

6. **STUDY OF LIGHT:**
   - a. **Transmission of light:** light 1067; ether 627; light waves 2059.
   - b. **Reflection:** 1067; dispersion 534; heliograph 859.
   - c. **Refraction:** 1067; diffraction 531; diffraction grating 531; spectroscope 1793; plucker tube 1506; interference 932; polarization 1515.
   - d. **Prisms:** 1550; 1125.
   - e. **Optical instruments:**
     1. **Lenses:** 1053; eye 643; spectacles 1793; focus 688.
     2. **Photography:** 1476; camera 315.
     3. **Microscope:** 1220.
     4. **Telescope:** 1885; opera-glass 1386; micrometer 1220; telemeter 1883; magic lantern 1144.
   - f. **Color:** 427; color photography 1477; actinism 9.

7. STUDY OF HEAT:

a. **Charles' law:** 370.
b. **Work:** Erg 623; caloric 311; heat 856.
c. **Power:** 1541; dynamometer 569; radiometer 1579.
d. **Energy:** force 692; geyser 762.
e. **Specific heat:** 1793; 856.
f. **Heat engines:** Gas engine 740; automobile 147; steam engine 1815; governor 788; indicator 922; turbine 1153; boiler 236; stoker 1830; injector 926; safety valve 1652.
g. **Artificial refrigeration:** 1598; ice machines 911.
h. **Conduction, convection and radiation of heat:** heat 855; radiation 1579.
i. **House heating:** 856.

8. STUDY OF SOUND:

a. **Sound and its transmission:** 8.
b. **Wave motion:** 2058.
c. **Velocity of sound:** 8.
d. **Reflection of sound:** 579.
e. **Loudness of sound:** 8.
f. **Pitch:** 1495.
g. **Vibration:** Acoustics 8; resonance 1602; phonograph 1474; voice 2026.
h. **Musical instruments:** Violin 2022; organ 1393; pianoforte 1487; harp 841; flute 687; lute 1124; reed 1597; bagpipe 157; saxhorn 1685; saxophone 1686; trombone 1944; cymbals 492; drum 554; tambourine 1868; guitar 813.
i. **Harmony:** 838; music 1286.

9. MAGNETISM:

a. **Magnets:** 1145; 907.
b. **Magnetic field:** 1145.
c. **The earth as a magnet:** 1145.
d. **The compass:** 435.

10. STATIC ELECTRICITY: Roentgen rays 1624; cathode rays 351; Becquerel rays. 190.

11. CURRENT ELECTRICITY:

a. **Current:** 597; dynamo-electric machines 568; voltmeter 2029; galvanometer 731; transformers 1934; armature 104.
b. **Potential:** 1537.
c. **Resistance:** Ohm's law 598; Wheatstone's bridge 2074.
d. **Units of electrical measurement:** 599; power 1542; ampére 65.
e. **Cells:** Voltaic cell 597; battery 182; storage battery 1833.
f. **Chemical, magnetic and heating effect of the current:** 598; induction coil 923; lines of force 1077; lightning arrester 1069; magnetic induction 1145; thermostat 1901.
g. **Electroplating:** plating 1502; electrolysis 603.
h. **Dynamo:** 568.
i. **Motor:** electric motor 600; motor 1271; Niagara power 1346; trolley-cars 1943.
j. **The telegraph:** 1881; wireless 1883; cable 301; telephone 1884; electric lamps 599; microphone 1220; photophone 1478; telephotography 1885; phonophone 1475; telautograph 1881.

DISTINGUISHED PHYSICISTS: Archimedes 92; Galileo 730; Newton 1344; Torricelli 1925; Huygens 902; Regnault 1598; Fahrenheit 645; Celsius 357; Kepler 1000; Watt 2056; Davy 509; Faraday 648; Maxwell 1192; Hertz 870; Bunsen 289; Herschel 869; Kelvin 996; Helmholtz 860; Thomson 1906; Rowland 1639; Tesla 1894; Michelson 1218; Boyle 255; Gilbert 766; Bacon 154; Franklin 708; Cavendish 353; Galvani 731; Volta 2028; Rumford 1643; Carnot 338; Clausius 406; Joule 980; Young 2125; Fresnel 718; Draper 551; Fraunhofer 710; Kirchhoff 1006; Langley 1026; Newcomb 1341; Oersted 1372; Ohm 1375; Henry 864; Weber 2062.

BOTANY

THE SCOPE OF THE SUBJECT: Botany 249.

DIVISIONS OF THE STUDY:

Taxonomy — the classification of plants 1875.
Morphology—the forms of plants 1264.
Physiology — the activities of plants 1487.
Ecology — the environment of plants 580.

I. TAXONOMY:

THE FOUR DIVISIONS OF THE PLANT KINGDOM:

1. **Thallophytes:** meaning thallus-plant; having a characteristic plant-body 1897.
2. **Bryophytes:** having distinct alteration of generations and more complex body 281.
3. **Pteridophytes:** having a leafy and vascular sporophyte; and producing no seeds 1558.
4. **Spermatophytes:** meaning seed-plants, called flowering plants 1797.

(Note: The first three of the above divisions are called Cryptogams — plants that do not produce seeds — 484. There is also a group between plants and animals called Myxomycetes: 1297.)

1. **THE THALLOPHYTES:** the lowest group of plants 1897.

a. **The Algæ:** most primitive forms of the plant kingdom 48; and making their own food with chlorophyll 393.
- (1) **The Cyanophyceæ:** the blue-green algæ, or green slimes 491; coenocyte 419; Heterocyst 871.
- (2) **The Chlorophyceæ:** the green algæ 392.
  - (a) **Protococcus forms:** 1554.
  - (b) **Conferva forms:** 392.
  - (c) **Siphon forms:** as spirogyra 1800.
  - (d) **Conjugate forms:** or brown algæ 1463.
- (3) **The Phæophyceæ or brown algæ:** 1463; the Sargassum, making the Sargasso seas 1681.
- (4) **The Rhodophyceæ or red algæ;** prized souvenirs of the seashore 1609; Lichens — intermediate forms 1065; symbiosis 1859.

b. **The Fungi:** taking their food from other plants 714; parasites 1420; saprophytes 1678; mycelium 1293; mycorrhiza 1294.

(1) Four groups of fungi:
- (a) **Phycomycetes:** 1479; as black-moulds, downy mildews 1224; cœnocyte 419.
- (b) **Ascomycetes:** 17; blue-moulds, truffles, 1946; and perhaps yeasts 2121; mildews 1224.
- (c) **Æcidiomycetes:** 17; as rusts 1649; and smuts 1772.
- (d) **Basidiomycetes:** as mushrooms 1284; toadstools 178.

2. **THE BRYOPHYTES:** the second group of plants 281.
   a. **The Hepaticæ:** the liverworts 865; rhizoids 1606.
      (1) **Marchantiales:** 1168; green above and with rhizoids on under surface 1606.
      (2) **Jungermanniales:** like delicate moss 865.

(3) **Anthrocerotales:** from which the mosses came 1270; and perhaps ferns and seed-plants 78.

b. **The Musci:** 1282; known as mosses, about 3000 species 1270.
   (1) the sphagnum mosses: bog-mosses which form peat 1797; 1436.
   (2) True mosses: 1270.

3. **THE PTERIDOPHYTES:** 1558.
   a. **The Lycopodiales:** called club-moses or ground-pines 1125.
      (1) **Lycopodium:** coarse forms 1125.
      (2) **Selaginella:** the "little club-mosses" 1125.
   b. **The Equisetales:** known as horse-tails or scouring rushes 622.
   c. **The Filicales:** known as the ferns, with about 4000 species 661.
      (1) **The groups of ferns:** 656:
         (a) **Tall swamp-ferns.**
         (b) **Coarse ferns of swamps and woods.**
         (c) **Small and medium sized ferns.**
         (d) **Delicate rock and wood ferns.**
         (e) **The brake fern** — growing to seven feet.
         (f) **Maiden-hair fern**—most highly regarded fern.
         (g) **The evergreen wood-fern.**

4. **THE SPERMATOPHYTES:** reproducing themselves by means of seeds 1797.
   a. **The Gymnosperms:** naked seed-plants 818.
      (1) **The Gnetums:** growing in deserts and the tropics.
      (2) The Ginkgo or maiden-hair tree 767.
      (2) **The Cycads:** probably came from the ferns 492.
      (4) **The Conifers:** the greatest group of living gymnosperms 443; containing pines 1491; spruces (fir) 675; hemlocks 860; redwoods (sequoia) 1724; cedars 354; cypresses 492; junipers 982; yews 2126.
   b. **Angiosperms:** seeds exposed — the most recent group of plants 73.
      (1) **The Monocotyledons:** 1292.
         (a) **Grasses:** 795.
         (b) **Lilies:** 1070.
         (c) **Orchids:** 1390.
         (d) **Palms:** 1412.
         (e) **Epiphytes:** air-plants 622; like Spanish moss, orchids 1390.
      (2) **The Dicotyledons:** 100,000 species 530.
         (a) **First series:** morning glories 1263; phloxes 1472; gentians 744; mints 1237; verbenas 2010; composites 435; which include asters 126; thistle 1904; goldenrod 778; sunflowers 1849; chrysanthemum 396; daisy 496; sage 1653; dandelion 500.
         (b) **Second series:** buttercups 296; mustards 1292; cabbage, cauliflower, rutabaga and turnip 1292; roses 1633; common forest trees — as oak 1367; hickory 872; walnut 2038; birch 192; elm 609; poplar 1528.

II. MORPHOLOGY.

1. **THE CELL:** the unit of structure 355.
   - a **Cellulose:** cell-wall 357.
   - b **Protoplasm:** the living substance of the cell 1554.
     - (1) The nucleus 1365.
     - (2) The cytoplasm 493.
   - c **Karyokinesis:** cell division 993; as in diatoms 527; and nostoe 492.
     - (1) **Meristem** or formative tissue 1207.

2. **THE SPORES:** special cells for reproduction 1803.
   - a **The Archesporium:** which sets apart certain cells for reproduction 91.
   - b **Asexual spore:** —formed by cell division 117.
     - (1) **The sporangium:** in which the spores are formed 1803.
     - (2) **The tetrad formation:** four sister spores 1894.
   - c **Sexual spore:** formed by union of cells 1730.
     - (1) **The gametes:** or sexual cells 735.
     - (2) **The antheridium:** or male organ 78.
     - (3) **The archegonium:** or female organ 91.
     - (4) **The sperm:** the male cell 1796.
     - (5) **The oösphere:** the female cell 1385.
     - (6) **The oöspore:** or fertilized egg 1385.

3. **ALTERNATION OF GENERATION:** 55.
   - a. **Gametophytes:** the generation producing sex-organs 55; apogamy 83.
   - b. **Sporophytes:** the generation producing asexual spores 1804; apospory 83.
   - c. **Homospory:** in which the gametes are alike 883.
   - d. **Heterospory:** in which the gametes are unlike 871.
     - (1) **Microspores:** producing male gametophyte 1221; microsporangium 1221.
     - (2) **Megaspores:** producing a female gametophyte 1199; megasporangium 1199.

4. **THE SEEDS:** which produce the flowering plants 1718.

   a. **Parts of the seed:**
   - (1) **The testa:** or hard coat upon which hairs and wings grow 1894.
   - (2) **The embryo:** the essential part of the seed 611;
     - (a) **Cotyledons:** the first leaves developed 465.
     - (b) **Hypocotyl:** the stem-like portion beneath 907.
   - (3) **The endosperm:** food tissue within embryosac 614.
   - (4) **The perisperm:** food tissue outside embryosac 1452.

b. **The dispersal of seeds** 1717.
- (1) **By currents of air:** as the thistle 1904; milkweed 1226; dandelion 500;
- (2) **By currents of water:** from headwaters to floodplains and banks.
- (3) **By animals:** indigestible seeds; and grappling appendages.
- (4) **By explosive fruits:** forcibly discharging seeds.

5. **THE SHOOT:** part of the plant growing upward 1747.

a. **The Stem:** axis of the plant 1821.

(1) **The meristem:** formative tissue in all growing organs 1207.

(2) **The dermatogen:** the embryonic region producing epidermis 522;
- (a) **The epidermis:** protective covering of all higher plants 621;
- (b) **The hypodermis:** cells just beneath epidermis 907;
- (c) **The collenchyma:** having a pearly-white luster 425.
- (d) **The hair:** cells formed outside the epidermis 825.

(3) **The periblem:** the embryonic region producing cortex 1452.

(a) The cortex: tissue containing the active cells 462; the bark 172; the bast 179; the cork 456.

(4) **The plerome:** the embryonic region producing the stele 1504.

(a) **The stele:** the central region of mature stems 1821.
1. **The vascular bundles:** the conducting system 2004; sclerenchyma 1707; the xylem or wood 2118, containing the trachea 1930; the phloem or bast—for the transfer of food 1472.
2. **The heartwood:** the colored wood 854.
3. **The sapwood:** new wood through which sap flows 1678.

(5) **The bud:** an undeveloped shoot 283;
- a. **Leaf-buds:** from which the axis grows.
- b. **Flower-buds:** from which the flower comes.

(6) **Rootstock or rhizom:** an underground stem 1633.

a. **The Tuber:** one form of underground stem 1948; as potato 1537.

(7) **The node:** joints in the stem 1354.

(8) **The internodes:** portions of stem between the nodes 933.

b. **The Branch:** a repetition of the axis of stem 259.

(1) **Dichotomous branching:** axis dividing into two branches 529.

(2) **Monopodial branching:** giving of branches from side of stem 259.

(3) **Chladophyll:** branches which replace leaves 403.

(4) **The axil:** where branches normally arise 149.

c. **The Leaf:** expanded organ of higher plants, for displaying green tissue to air and sunlight 1041.

(1) **Deciduous leaves:** growing off every year 512.

(2) **Phyllotaxy or the arrangement of leaves.**
- (a) **The verticillate or cyclic arrangement:** two or more leaves at one node 1480.
- (b) **The alternate or spiral arrangement:** single leaf at each node 1480.
  1. **Angular divergence:** how obtained.

(3) **Structure of the leaf.**
- (a) **External:** blade — expanded part of the leaf 1041; petiole — stalk upon which the leaf grows 1461; stipules — appendages at the axil 1827.
- (b) **Internal:** epidermis — upper and lower surfaces of leaf 622; stomata 1831; cuticle 490; mesophyll — giving the leaf its color 1209; chloroplast 393; vein ends — penetrating among mesophyll cells 1041.
- (c) **Closed venation:** parallel veined leaves, as in grass and the lily 1041.
- (d) **Open venation: net-veined or reticulate** 1041.
  1. **Pinnate leaves.**
  2. **Palmate leaves.**

(4) **Special forms in leaf structure:** 1042; bracts 255; cupule 487; palet 1411; glumes 775; scales 1686; bulb 286; spines 1799; tendril 1888; pitcher plants 1495; carnivorous plants 338.

(5) **Position of leaf:**
- (a) **Dorsiventral:** exposing two surfaces to different conditions 545.
- (b) **Radial:** all sides exposed alike 545.
- (c) **Profile:** one edge turned toward intense sunlight, as compass-plants 435.

6. **THE ROOT:** that part of the plant growing downward 1632.
- a. **Epidermis:** the outside covering.
- b. **Cortex:** more or less thickened.
- c. **Axis:** the woody central part.
- d. **Root-cap:** that protects the tip cells in burrowing.
- e. **Root-hairs:** to help the root in absorbing.
- f. **Root tubercles:** which supply the plant with nitrogen 1633.
- g. **Rhizoids:** holdfasts and absorbing organs 1606.
- h. **Mycorrhiza:** aiding roots in absorbing 1294.

7. **THE FLOWER:** a modified shoot of seed-plants 685.
   a. **Where and how the flowers grow:** 925.
      (1) **Solitary:** occurring solitary upon plants.
      (2) **Inflorescence:** clusters of flowers.

(a) The botryose type: lowest flowers the oldest—prominent botryose types of inflorescence: raceme; panicle; thyrsus; corymb; umbel; spike; spikelet; head; ament or catkin; spadix.

(b) The cymose type: topmost flowers the oldest—cyme cluster, resembling the corymb.

b. Structure of the flowers:

(1) The receptacle or torus: in which the floral organs are inserted 1592.

(2) The floral organs:

- **(a) Floral leaves: the two outer sets of organs:**
  1. **The calyx:** 312; composed of sepals 1724.
  2. **The corolla:** 459; composed of petals 1459.
- **(b) Sporangial leaves: the two inner sets of organs:**
  1. **The stamens:** outermost set of sporangial leaves 1808.
     - a. **The filament:** a stalk-like portion 661.
     - b. **The anther:** which bears pollen 78; pollen 1518; connective 445.
  2. **The carpels:** inner set of sporangial leaves 340.
     - a. **The pistil:** an individual carpel 1494.
     - 1. **The ovulary:** 1402.
     - 2. **The style:** 1842.
     - 3. **The stigma:** 1827.
- **(c) Modification in the forms of flowers:**
  - (1) **Apetalous:** one set of floral leaves lacking 82.
  - (2) **Naked:** both sets of floral leaves lacking 686.
  - (3) **Pistillate:** stamen set lacking 686.
  - (4) **Staminate:** carpels lacking 686.
  - (5) **Syncarpous:** carpels united 1860.
  - (6) **Apocarpous:** carpels separated 83.
  - (7) **Sympetalous:** petals united 1860.
  - (8) **Polypetalous:** many petals 1522.
  - (9) **Actinomorphic:** regular petals 9.
  - (10) **Zygomorphic:** unlike petals 2138.
  - (11) **Gamosepalous:** sepals united 686.
  - (12) **Monodelphous:** all filaments united 686.
  - (13) **Perianth:** calyx and corolla united 1452.
  - (14) **Epigynous:** sepals, petals and stamens above ovulary 622.
  - (15) **Hypogamous:** sepals, petals and stamens beneath ovulary 907.

III. PHYSIOLOGY.

General Reference: The activities of plants 1487.

1. **NUTRITION:** processes by which food is obtained and utilized 1366.

a. How plants obtain food:
- (1) **Absorption:** by which materials are taken into the plant body 5.
- (2) **Aeration:** means for taking in and expelling air and dioxid 18.
- (3) **Respiration:** by which energy is set free in the plant 1602.
- (4) **Water transfer:**
  - (a) Ascent of water through vascular system 2051.
  - (b) Transpiration or of water by evaporation 1936.
  - (c) Turgor or pressure of water within the cells 1954.

b. How plants utilize their food:
- (1) **Metabolism:** all the chemical processes of the living organism 1210.
- (2) **Digestion:** changing insoluble foods to soluble or soluble to simpler forms 532.
  - (a) Enzymes: or soluble ferments 620.
  - (b) Fermentation: decomposition of substances by living plants 656.
- (3) **Secretion:** substances separated from the protoplasm 123.
- (4) **Assimilation:** changing foods into protoplasm 123.
- (5) **Foods:** materials used in formation and repair of plant-body 690; carbohydrates 332; proteids 1553.
- (6) **Photosynthesis:** the process of making sugar and starch food 1479; chloroplast 393; chlorophyll 393.

c. How plants grow:

(1) **Growth:** alteration of form, increase in size 808.

2. **REPRODUCTION:** making new plants 1601.

a. Vegetative propagation: 1552.
- (1) **Gemmæ:** mass of cells producing a new body 742.
- (2) **Runner:** a branch which takes root at the tip 1643.
- (3) **Rootstock:** underground stem sending up shoots 1633; tuber 1943.
- (4) **Grafting:** propagation by a budbearing portion of plant 789.

b. Reproduction by means of spores: 1803.

(1) **Pollination:** transfer of pollen from stamen to stigma 1518.

(2) **Conjugation:** union of sexual cells which are alike in appearance 443.

(3) **Fertilization:** union of unlike cells, sperms and eggs 657.

(4) **Germination:** 760.
1. Formation of new plants by spores.
2. Formation of plant from seed.

IV. ECOLOGY.

General Reference: the relation of plants to their environment 580.

1. **MOVEMENTS IN PLANTS:** 1273.

a. **Motor organ:** portion of leaf stalk sensitive to a stimulus 1271.

b. **Irritability:** a condition of protoplasm in which it undergoes a change 943; sensitive plants 1734.
- (1) **The stimulus:** a change in the surroundings.
- (2) **The reaction:** the consequent change in the protoplasm.
- (3) **The death of plants:** a loss of irritibility.

c. **Chemotaxis:** sensitiveness to a onesided chemical stimulus 376.
d. **Chemotropism:** sensitiveness to a onesided chemical stimulus 376.
e. **Geotropism:** sensitiveness to the earth's gravitation 755.
f. **Heliotropism:** sensitiveness to a change in direction of light 859.
g. **Hydrotropism:** sensitiveness to presence of moisture 904.
h. **Phototaxis:** sensitiveness to unequal illumination 1479.
i. **Rheotropism:** sensitiveness to a direction of current of water 1606.
j. **Thermotropism:** sensitiveness to heat coming from one side 1901.
k. **Twining:** caused by sensitiveness to contact 1960.

2. **MEANS USED FOR POLLINATION:**
   a. **Amenophilous plants:** using the wind for pollination; gymnosperms 818.
   b. **Entomophilous plants:** using insects for pollination; insects and flowers 930.
      (1) **Self-pollination:** pollen transferred to its own stigma 1519.
      (2) **Cross-pollination:** pollen transferred to stigma of another flower 1519.

3. **RELATION TO FOOD SUPPLY:**
   a. **Symbiosis:** living together of plants 1859.
      (1) **Parasitism:** in which the host is injured 1420.
      (2) **Mutualism:** in which the host is benefited 1293.
      (3) **Helotism:** in which the host is neither benefited nor injured 860.
   b. **Saprophytes:** which obtain food from decaying bodies and organic products 1678.
   c. **Carnivorous plants:** which capture insects for food 338.
   d. **Epiphytes:** getting all food from the air 622.
   e. **Hydrophytes:** plants living in water 904.
      (1) **Free floating societies:** entirely sustained by water.
      (2) **Pondweed societies:** anchored but submerged.
      (2) **Swamp societies:** rooted in water but rising above surface.
   f. **Xerophytes:** adapted to dry soil and air 2117.
   g. **Halophytes:** growing in saline or alkaline soil 828.
   h. **Sensitive plants:** folding leaves to avoid drought and too intense light 1724.
   i. **Geophilous plants:** with special structures for preservation 563.

4. **DURATION IN PLANTS:** 562.
   a. **Annual plant:** lasting a single season 75.
   b. **Biennial plant:** foliage one year, stalk the next 210.
   c. **Perennial plant:** living from year to year 1451.

STUDY OF THE HUMAN BODY

HISTORY OF THE SUBJECT: 212.

Divisions:

a. **Anatomy, which explains the structure of the body** 67.
b. **Physiology, which explains the vital activities** 1486.
c. **Hygiene, which treats of the preservation of health** 905.

I. ANATOMY:

1. THE SKELETON: 1763.

- a. **Bone:** the hard material of the skeleton 242.
- b. **Cartilage:** the gristle or soft bone: 806.
- c. **Skull:** the hard framework of the cranium 1764.
- d. **Hand:** 833.
  - (1) The carpus or wrist, with 8 bones.
  - (2) The metacarpus or palm, with 5 bones.
  - (3) The digits or fingers, with 14 phalanges.
- e. **Foot:** 690.
  - (1) The tarsus or ankle.
  - (2) The metatarsus or instep.
  - (3) The phalanges or toes.

2. THE MUSCLES: 1283.

- a. **Voluntary or striated:** which are controlled by the will.
- b. **Involuntary or smooth:** not controlled by the will.
- c. **Heart muscle:** striated and branched.
- d. **Belly:** the middle part of the muscle.
- e. **Tendon:** the ends of the muscle.
- f. **Origin:** the end attached to a fixed bone.
- g. **Insertion:** the end attached to the moving bone.

3. THE SKIN:

- a. **Epidermis:** or outer skin composed of cells 1764.
- b. **Dermis:** the inner and true skin 1764.
- c. **Sweat glands:** which open through the skin 1764.
- d. **Hair:** which grows from the epidermis 824.

4. THE NERVES: 1320.

- a. **White tissue:** which is composed of fibers.
- b. **Gray tissue:** which is composed of nerve cells.
- c. **Sensory nerves:** made up of sensitive fibers.
- d. **Motor nerves:** made up of motor fibers.
- e. **Tropic nerves:** which regulate nutrition.
- f. **Secretory nerves:** which stimulate secretion.
- g. **Cranial nerves:** connected with head, heart, stomach and intestines.

5. THE BLOOD:

- a. **Plasma:** the fluid part of the blood 1725.
- b. **Fibrin:** fine threads contained in the plasma 1725.
- c. **Serum:** the liquid part of the plasma 1725.
- d. **Red corpuscles:** containing hæmoglobin which holds oxygen 228.
- e. **White corpuscles:** which can creep and change form 228.
- f. **Lymph:** which arises from the plasma in the capillaries 1126.
- g. **Systemic circulation:** blood going through the system 228.
- h. **Pulmonary circulation:** blood going through the lungs 228.
- i. **Portal circulation:** blood going through the liver 1102.

6. THE HEART:
- a. **Auricles:** chambers of the heart that receive blood 853.
- b. **Ventricles:** chambers of the heart that expel blood 853.
- c. **Partition:** separating the right and left cavities 853.
- d. **Valves:** which regulate the flow of the blood in the heart 853.
- e. **Arteries:** tubes which carry blood away from the heart 113.
- f. **Veins:** tubes which carry blood toward the heart 853.
- g. **Capillaries:** which carry blood from veins to arteries 853.
- h. **Pulse:** distension of arteries by blood pressure 1560.
- i. **Valves in veins:** to prevent back flow of blood 853.

7. THE LUNGS:
- a. **Trachea or windpipe:** the air passage through the throat 1603.
- b. **Bronchi:** the two branches of the windpipe 1603.
- c. **Bronchial tubes:** small tubes branching through the lungs 1603.
- d. **Air sacs:** ends of tubes in lungs 1603.

8. THE BRAIN:
- a. **Cerebrum:** the fore part of the brain 257.
- b. **Cerebellum:** the hind part of the brain 257.
- c. **Medulla Oblongata:** between brain and spinal cord 257.

9. THE EYE: 643.
- a. **Scleratic coat:** the tough outer coat which forms the cornea.
- b. **Choroid coat:** the dark middle coat which forms the iris.
- c. **Retina:** the delicate inner coat, made up of cells, rods and cones.
- d. **Vitreous humor:** transparent fluid in the main cavity of the eyeball.
- e. **Aqueous humor:** transparent fluid filling the front cavity of the eyeball.
- f. **Crystalline lens:** which focuses the light upon the retina.
- g. **Optic nerve:** which carries sensations to the brain.

10. THE EAR: 572.
- a. **Outer ear:** the part outside the head and the tube leading inward.
- b. **Middle ear:** containing the hammer, the anvil and the stirrup.
- c. **Inner ear:** containing the cochlea and the semicircular canals.
- d. **Tympanic membrane:** between the outer and middle ear.
- e. **Eustachian tube:** the air passage from throat to middle ear.

11. THE TONGUE: a muscular organ within the mouth 1922.

12. THE NOSE: the external organ of the sense of smell 1362.

13. THE SALIVARY GLANDS:
- a. **Parotid:** in front of each ear 1665.
- b. **Submaxillary:** under the lower jaw 1665.
- c. **Sublingual:** under the tongue 1665.

14. THE TEETH:
- a. **Enamel:** the outside of teeth, hardest substance in the human body 1880.
- b. **Dentine:** a bony substance produced from the dermis 1880.
- c. **Pulp:** the living substance inside of teeth 1880.

15. THE STOMACH: 1831.

a. **Outer coat:** a firm serus membrane.
b. **Muscular coat:** with muscular fibers running through it.
c. **Third coat:** loosely woven fibrous tissue.
d. **Mucous coat:** which contains the mucous glands.
e. **Cardiac glands:** those glands near the heart.
f. **Pyloric glands:** those glands at the intestines.

16. THE VOCAL CORDS: by which the voice is produced 2026.

17. THE LIVER:

a. **Lobules:** with blood and lymph vessels, nerves and bile duct branches running through them. Five sided and composed of cells 1102.
b. **Portal veins:** which carry blood through the liver 1102.

II. PHYSIOLOGY: 1486.

1. DIGESTION:

a. **Gastric juice:** which acts on proteids 1831.
b. **Pancreatic juice:** a universal digester 1831.
c. **Pepsin:** a ferment contained in the gastric juice 1451.
d. **Enzymes:** which digest insoluble foods 620.
e. **Hydrochloric acid:** which sets the gastric juice working 1831.
f. **Saliva:** a digestive fluid made by the mouth 1665.
g. **Bile:** a digestive fluid made by the liver 1102.
h. **Chyme:** liquid condition of food when it passes from stomach 1831.
i. **Lymph:** a fluid which carries food through walls of capillaries 1126.
j. **Proteids:** which are mostly tissue-forming foods 1553.
k. **Carbohydrates:** the sugars, starch and cellulose foods 775; 1844; 1811.
l. **Blood:** which carries food and water to the tissues of the body 229.
m. **Liver:** which performs many offices of digestion 1102.

2. RESPIRATION:

a. **External:** which takes place in the lungs 1603.
b. **Internal:** which takes place in the tissues of the body 1603.
c. **Air:** which supplies oxygen used in respiration 33.
d. **Carbonic acid:** the carbon dioxide formed by respiration 332.
e. **Blood:** which carries oxygen to the lungs and tissues and carries dioxide away 228.

3. THE SENSES:

a. **Smell:** the sense that perceives odors 1768.
b. **Taste:** the sense that distinguishes the qualities of foods 1873.
c. **Touch:** the sense that distinguishes contact and pressure 1927.
d. **Hearing:** the sense by which sounds are distinguished 573.
e. **Sight:** the sense that distinguishes the sensations of light 572.

III. HYGIENE:

1. PERSONAL HYGIENE: 905.
   a. Importance of good habits: 821.
   b. How to overcome injurious habits: 822.
   c. The transmission of likenesses from parent to child: 867.
   d. Importance of cleaning and filling cavities of teeth: 1880.
   e. The advantages of play: 734.
   f. The benefits of physical education: 1480.
   g. The value of gymnastics: 818.
   h. The evil results of alcohol: 42.
   i. Defects of the eye: 644.
   j. Care in the selection of spectacles: 1793.
   k. The necessity of breathing pure air: 2042.
   l. How the air is made impure: 2042.
   m. Why the air is purer in the country than in the city: 34.
   n. Foods and foodstuffs: 689.
   o. Adulteration of foods: 16.

2. PUBLIC HYGIENE: 905.
   a. Heating and ventilation of public buildings: 856.
   b. Warming and ventilation of rooms: 2042.
   c. Vaccination, how and why it is used: 1997.
   d. The discovery of vaccination: 969.
   e. Work done by Louis Pasteur: 1428.
   f. Why milk should be sterilized: 1824.
   g. Captain Cook's cure for scurvy: 905.
   h. The use of antitoxin in disease: 1726.
   i. The work of white corpuscles in fighting disease: 229.
   j. The causes of contagious diseases: 155.
   k. The germ theory of disease: 761.
   l. The work done by bacteria: 1219.
   m. The success of hygiene in preventing disease: 905.

CHEMISTRY

1. **THE DEVELOPMENT OF CHEMISTRY AS A SCIENCE:** 376.
   - a. **The alchemists:** 41.
   - b. **Contributions to the science:** Boyle 225; Priestley 1405; Cavendish 353; Lavoisier 1037; Dalton 498; Davy 509; Thomson 1906; Volta 2029; Faraday 648; Liebig 1066.

2. **PHYSICAL AND CHEMICAL CHANGES:** 375; 1231.
   - a. **Elements:** 375.
   - b. **Compounds:** 375.
   - c. **Mixtures:** 375.
   - d. **Chemical action:** 375.

3. **FUNDAMENTAL LAWS AND THEORIES:**
   - a. **Indestructibility of matter:** 375.
   - b. **Definite proportion:** 376.
   - c. **Atomic theory:** 376.
     - (1) **Atoms:** 133.
     - (2) **Molecules:** 1247.

4. **OXYGEN:**
   - a. **Chemical and physical properties:** 1405; 53.
   - b. **Spontaneous combustion:** 1802.
   - c. **Ozone:** 1406; 53.

5. **HYDROGEN:** Chemical and physical properties 903.

6. **WATER:**
   - a. **Composition:** 2051.
   - b. **Mineral waters:** 1232.
   - c. **Hard waters:** 1072.
   - d. **As a solvent:** 2051.

7. **THE ATMOSPHERE:** 34.
   - a. **Important Constituents:** Oxygen 1405; nitrogen 1353; carbon dioxide 333; moisture as dew 526; rain 1582; clouds 412; frost 720; snow 1773.

8. **GAS-VOLUME LAWS:**
   - a. **Change in volume of gas for change in pressure:** Boyle's law 255; isothermal 946.
   - b. **Change in volume of gas for change in temperature:** Charles' law 371; Gay-Lussac 741.

9. **ACIDS, BASES AND SALTS:**
   - a. **Acids** 7; **alkali** 50; **salts:** 1668.
   - b. **Acid, basic, normal and neutral salts:** 1668.
   - c. **Commercial production of acids, bases and salts:** sulphur 1846; acetylene 6; soda 1777; baking powder 159; tartaric acid 1872.

10. **COMPOUNDS OF NITROGEN:**
    - a. **Ammonia:** 64.
    - b. **Nitric acid:** 1352.
    - c. **Nitrates:** 1353.

11. **SULPHUR AND ITS COMPOUNDS:** 1846.

12. **ELECTROLYTIC DISSOCIATION:**
    - a. **Electrolytes and irons:** 603.
    - b. **Laws of chemical equilibrium and mass action:** 603.
    - c. **Applications of electrolysis:** 603.

13. **CHLORINE AND ITS COMPOUNDS:** 1667.
    - a. **Hydrochloric acid:** 392.
    - b. **Aqua regia:** 353.
    - c. **Bleaching:** 226.

14. **CARBON:** 332; 599.
    - a. **The allotropic forms of carbon:** allotropy 53; graphite 795; coal 414; lampblack 1024; peat 1436.
    - b. **Properties of charcoal:** 367.
    - c. **The oxides of carbon:** 333; lime 1071.
    - d. **Hydrocarbons:** carbon 332; acetylene 6.
    - e. **Illuminating gas:** 739; natural gas 1306; coke 420; bitumen 221; asphalt 121.

15. **THE CHEMISTRY OF FOODS:** 689.
    - a. **Proteids:** 1553; nitrogen compounds 1353; 41.
    - b. **Carbohydrates:** 332; starch 1811; sugars 1844; cellulose 357; photosynthesis 1479; glucose 775.
    - c **Fats:** 689; oils 1376.

16. **FERMENTATION:**
   a. **Decay and spoiling of foods:** 656; carbon 333.
   b. **Sterilizing and pasteurizing methods:** 1824; 1428.
   c. **Production of alcohol:** 42; vinegar 2022; fermentation 656.

17. **PHOSPHORUS GROUP OF ELEMENTS:** 1475; 53.
   a. **Phosphates:** 1475.
   b. **Matches:** 1118.
   c. **Fertilizers:** 657.
   d. **Antimony and bismuth:** 80; 220; 1512.

18. **THE ALKALI METALS:**
   a. **Compounds of sodium:** 1777; salt 1667; borax 246; glass 772; tartaric acid 1872; saltpeter 1667.
   b. **Baking powders:** 159.
   c. **Soaps:** 1774.
   d. **Gunpowder:** 815.
   e. **Spectroscope and flame tests for metals:** 1793; plucker tube 1506.

19. **THE ALKALINE—EARTH METALS:**
   a. **Calcium:** 305.
   b. **Marble and lime:** 1167; 1071; gypsum 819; Drummond light 555.
   c. **Calcium carbide:** 305; acetylene 6.
   d. **Mortar and cements:** 357; gypsum 819.

20. **METALLURGY OF IRON:** 1211.
   a. **Cast iron, wrought iron and steel:** 939; 1819; furnace 725; ore-dressing 1235.
   b. **The Bessemer process:** 207; Kelly 995.
   c. **The open-hearth process:** 1820; rolling-mills 1625; foundry 702; flux 687.
   d. **Crucible steel:** 1820.
   e. **Annealing:** 75.

21. **COPPER:** 452.
   a. **Metallurgy:** 1211.
   b. **Electrolytic purification:** Electrolysis 603; metallurgy 1211.

22. **ORGANIC CHEMISTRY:** 375.
   a. **Hydrocarbons:** carbon 332; hydrogen 903; petroleum 1462.
   b. **Alcohols:** 42.
   c. **Acids:** 7.
   d. **Aniline dyes:** 73.

CLASSIFIED QUESTIONS

AGRICULTURE

What is agriculture? 26.
Has farming helped civilization? 26.
What ancient people knew the wisdom of crop rotation? 26.
What is crop rotation? 1636.
How much of the plant body comes from the soil? 1636.
Why do plants have roots of different lengths? 1636.
What helps to keep down weeds? 1636.
How does crop rotation help farm labor? 1636.
What crop rotation is recommended for the southern states? 1636.
How does breaking up the soil crust keep moisture in the ground? 331.
For what are nitrogen-gathering crops, like the pea and bean, remarkable? 1353.
How many pounds of nitrogen can an acre of cowpeas produce? 1353.
What is the market value of nitrogen? 1354.
What ancient people hatched poultry by artificial incubators? 26.
What is the production of eggs in the U. S.? 1540.
What ancient country is a good example of intensive farming? 27.
How did the end of the feudal system affect farming? 27.
What Englishman introduced drill rows? 27.
How are all breeds of live stock improved? 27.
How was the Shorthorn breed of cattle produced? 27.
Who developed the Herefords? 27.
Is there much stock raised east of the Alleghenies? 1828.
Where are the Chester White and Poland-China hogs produced? 1828.
Where are horses raised extensively? 1828.
Why must our future meat supply come from the farm? 1828.
In what stockyards are 25,000 men employed? 1830.
For what two purposes are cattle being developed? 352.
How many hogs are marketed in a year? 1857.
When did government inspection of meat begin? 1196.
Have all the presidents been friendly toward agriculture? 27.
Why did many pioneer farmers fail? 27.
Why are the average farm yields so low in the U. S.? 28.
What was the situation of the American farmer 100 years ago? 28.
When was the first society for promoting agriculture organized? 28.
Where are experiment stations usually located? 28.
What is the Land Grant Act? 29.
What have the Adams and Hatch Acts done for agriculture? 29.
When will each experiment station have $30,000 a year? 29.
How many furrows will a steam plow turn at one time? 29.
Who fashioned the modern plow? 29.
How are the plow, hoe, pick and hatchet related? 1506.
What does wheat cost to reap by a harvester? 1592.
What Chicago mayor bought a half interest in McCormick's reaper in 1846? 1133.
Who made the first successful reaper? 29.
Who invented the cotton gin? 29.
How are the different parts of the cotton plant used? 465.
What is the yearly consumption of cotton? 465.
How have the transcontinental railways helped the farmers? 29.
What determines the kind of crops to raise? 29.
What substances are made from corn? 457.
How does a corn harvester operate? 457.

What kind of corn is best for growing animals? 31.
What kind is best for fattening cattle? 32.
What has been done to wheat, corn and flax in Minnesota? 32.
How much has the production of corn increased since 1875? 29.
When did this country take first rank among all nations as a wheat producer? 29.
How do our farmers support our manufactories? 29.
What is the leading export farm product? 29.
How does the cotton crop of Texas compare with the entire crop of the world? 30.
How many farms are there in the U. S.? 30.
How does the corn crop compare with other crops? 30.
What is the mainstay of the meat-making industry? 30.
What has raised the price of corn in late years? 30.
What six states raise 60% of the corn crop? 30.
What has been the yield of wheat yearly in the U. S.? 30.
Is alfalfa better than red clover as a feed? 30.
What has alfalfa done for the dairy industry? 30.
When was alfalfa introduced into the U. S.? 46.
What is the richest forage plant known? 46.
What two soil conditions are against alfalfa? 46.
How does it compare in protein with timothy and clover? 47.
How does alfalfa improve the soil? 47.
What causes failures in growing alfalfa? 47.
What is the most important agricultural event of the century? 47.
What is the Babcock test? 30.
What does the separator do? 30.
How can a farmer tell his most profitable cows? 30.
When and by whom was the Babcock test invented? 151.
How much butter-fat in cows' milk? 151.
How much cream does the law require milk to have? 151.
How is cream graded? 151.
What instrument is used for testing the percentage of cream? 1019.
What is a silo? 30.
How does silage promote intensive farming? 30.
What is the benefit of veterinary schools? 31.
What has been the most valuable discovery of recent years for cattle? 31.
Is early maturity in meat producing animals a good practice? 31.
What is the leading meat-making feed on American farms? 31.
What is one of the marvels in horse speed? 31.
What is the hog supply of the Mississippi Valley? 31.
What study teaches the composition of soils and the composition of plants? 31.
How may plants be modified and improved? 31.
When was the merino sheep introduced into the U. S.? 1736.
How was butter making discovered? 296.
How is condensed milk made? 1226.
How many creameries are there in the U. S.? 475, 496.
Describe the cultivation of rice in the U. S.? 1610.
What plant supplies food for more human beings than any other? 1610.
Why is crop failure becoming less likely? 32.
What president founded the Federal Department of Agriculture? 32.
What is the aim of agricultural experiment stations? 32.
What are the conditions of admission to the state agricultural colleges? 32.
What university gives instruction in agriculture by correspondence? 32.
What is the feeder's problem? 159.
What is meant by nutritive ratio? 159.
What are the Wolf-Lehmann feeding standards? 159.
What is the nutritive ratio of corn? 159.
What are cedar apples? 227.
Why is plant breeding used? 227.
Why does tramping down the soil help small seeds? 331.
How does a soil-mulch keep moisture in the ground? 331.

What is dry farming? 331.
What is a good crop on soil too poor for clover? 470.
How many creameries are there in this country? 475.
How are creameries conducted? 475.
What advantage has the separator? 475.
What are the two classes of feeding stuffs? 651.
What are the forage crops? 652.
How do cattle get the bloat? 652.
What three fertilizers are in use? 657.
What parts of a plant need nitrogen? 657.
What does potash produce? 657.
What gives general plant vigor? 657.
Why does a wise farmer mix his own fertilizers? 658.
How many pounds of fertilizer does an acre need? 658.
What is a good garden fertilizer? 658.
One ton of fish guano equals how many tons of manure? 809.
What are the different methods of grafting? 789.
Can plants of differing species be grafted? 789.
When is the best time for grafting? 789.
Why must fruit trees be grafted? 789.
What are the two kinds of feeds? 283.
What is the difference between a hot bed and a cold frame? 888.
When should hot beds be started? 888.
How can violets be forced to bloom early? 888.
What does humus do for stiff soils? 898.
What is sedimentary soil? 1778.
What is alluvial soil? 1778.
What are bottom lands? 53.
How do plants and animals make soil? 1778.
What is soil mulch? 1275.
How many pounds of minerals do plants take from the soil yearly? 1778.
What is "mound" layering? 1040.
What is green crop manure? 1165.
What plants are most widely used for this purpose? 1165.
What makes manure worth $2.50 to $4.50 per ton? 1165.
What causes horse manure to lose $1 per ton during summer? 1165.
How is plant breeding done? 1500.
What is a hybrid plant? 1501.
Do most seeds "breed true"? 1501.
What happens from selling large potatoes and planting small ones? 1501.
How does the Canadian thistle spread? 1552.
What is vegetative reproduction? 1552.
What is the benefit of seed dispersals? 1718.
How do air currents carry seeds? 1718.
Can seeds germinate after being soaked in water? 1718.
How do animals carry plant seeds? 1718.
What are explosive fruits? 1718.
Into what two classes may fruits be classed? 721.
What part of the seed is involved in the bean pod? 721.
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What is subsoiling? 1842.
At what rate should subsoiling go on? 1842.
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What is the name of the young of all insects? 1032.
What is the most important insect enemy of the fruit grower? 419.
What three states suffer $7,000,000 damage yearly from the codlin-moth? 419.
What is a preventive for this insect? 419.
How do plant lice suck the juices of the plants? 82
What insect is mistakenly called American blight? 82.

What are the natural enemies of plant lice? 82.
What insects keep herds of plant lice as "milch cows"? 82, 76.
What valuable service does the ladybug give to farmers? 1019.
How did the Australian ladybird save the orchards of the Pacific Coast? 1019.
What destructive insect has spread from San Jose, California, to every state in the Union? 1687.
How was it carried from place to place? 1687.
How are maple trees damaged? 1687.
How are the twigs marked when this pest is present? 1687.
What insect is destructive to vineyards? 795.
What moths work havoc on the grapevine? 1270.
What causes young grape leaves to curl up? 1270.
What moth strips the foliage from fruit and shade trees? 1271.
What does the army worm look like? 109.
What are the natural enemies of the army worm? 109.
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How does the cotton boll-weevil destroy the cotton fibre and seed? 465.
How is the Department of Agriculture trying to fight the boll-weevil? 465.
When did the boll-weevil come from Mexico? 465.
How does the plum weevil bury her eggs in the fruit? 2064.
What insect destroys the strawberry patch? 2064.
How are beetles useful; and how are they destructive? 194.
What are the natural enemies of the beetle? 194.
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How should trees be protected from canker worms? 323.
What bird was brought from England to fight the canker worm pest? 322.
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How may plants be protected from cut worms? 491.
In what part of the United States has the chinch bug caused a loss of $60,000,000 in a single year? 389.
How is the chinch bug marked and colored? 389.
What states suffered a loss of $200,000,000 from grasshoppers between 1874 and 1876? 796.
How were they successfully combated in 1877? 796.
Is a grasshopper different from a locust? 796.
How are locusts destroyed? 1106.
Is the katydid harmful to vegetation? 993.
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On what part of the tree are the eggs laid? 1434.
What is the appearance of the tobacco and tomato worms? 1918.
When should a tobacco worm by no means be destroyed? 1919.
What are hawk-moths? 851.
How are jimson weed and molasses used for combating this pest? 1919.
What did the potato bug feed on up to 1859? 1537.
How many years did it take the potato bug to spread over the entire United States? 1537.
How does the gall fly deposit its eggs on plants? 688.
How does the stable fly differ from the house fly? 688.
What crop has suffered immense damage from the Hessian fly? 870.
Whereabouts on the grain stalk does the young Hessian fly fasten itself? 870.
How can this pest be destroyed? 870.
What destructive house pest is often found on currant bushes? 340.
What insect feeds on flies and butterflies and robs the honey bee on her way home? 886.
What are young wasps fed on? 2050.
How do insects use the gall nuts or oak apples found on the leaves and stems of oak trees? 1368.
What greedy insects will eat through book covers? 418.
How are insects useful to the flowers? 930.

How are the earthworms of service to the soil? 575.
How many tons of soil in an acre of garden will pass through the bodies of earthworms in a year? 575.
What are the most dangerous worms? 2012.
Where are the trichina worms found lodged in pork? 1942.
What do the trichina worms do after they get into the human body? 1942.
How do hogs get trichina into their bodies? 1942.
What insect kills poultry and domestic animals? 286.
What is the difference between the red rust on wheat stalks and the black rust on wheat stubble? 17.
What are the rusts and smuts that destroy cereals and higher plants? 17.
Is there any successful way to combat the rusts? 1649.
Why do fungus plants attack other plants? 724.
What are parasites? 1420.
What very small plant causes souring in milk and fruit juices, fermentation and decay, pear-blight and melon-wilt? 155.
What diseases may be caused by milk? 1824.
What is the chief value of cooking food? 1824.
Why is it necessary to sterilize all articles used about milk? 1225.
What treatment is recommended for plants suffering from downy and powdery mildews? 1224.
What treatment is good for the foliage and fruit of pear trees suffering from pests? 1435.
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How may blights be roughly classed? 227.
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What are spraying mixtures? 1804.
How is the ammoniacal solution of copper carbonate made? 1804.
How many sorts of insecticides are used for spraying? 1804.
How are sucking and biting insects killed? 1804.
What is paris green made of? 1804.
How is kerosene emulsion made? 1804.
How is carbon bisulphide used for cut-worms? 1804.
How are the seeds of the poison ivy scattered? 1511.
How did the poison oak gets its name? 1511.
How may poison sumac be known from other shrubbery? 1511.
What plant eaten for greens has very poisonous roots? 1511.
How is flour sometimes made poisonous? 1511.
What deadly poison is contained in the seeds and leaves of the black cherry? 1511; acid 7.
How may children be poisoned by jimson weed? 1512.
What hawk destroys innumerable grasshoppers and mice? 850.
Why should the duck-hawk and the pigeon hawk be destroyed? 850.
What hawk is the dreaded enemy of poultry? 850.
Why should the chicken hawk never be injured? 850.
What hawk is the greatest of all destroyers of noxious four-footed animals? 850.
Should the shooting of hawks be encouraged? 850.
Why should the owls be protected? 1403.
Which owl is the greatest enemy of rats? 1403.
What fierce owl has given a bad name to all the family? 1404.
What is the food of the screech owl? 1404.
What owls are savage little creatures, often killing each other in fighting? 1404.
What bird destroys large numbers of the codlin-moth? 419.
Why should woodpeckers be protected in every possible way? 2107.
What bird may well be called caterpillar bird? 485.
How are caterpillars protected from the birds? 350.
What bird eats the seeds of weeds? 1195.

What bird is a desirable neighbor and should have a house built for it? 231.
What bird does great damage to rice fields? 233.
What good work is done by the bob-white? 233.
What bird rids the air of gnats and mosquitoes? 288.
What bird is called the mosquito hawk? 1349.
What birds are noted thieves and often steal jewelry? 1147.
What bird is accused of killing bees? 1004.
What injury is done to shade trees and orchards by the sap-suckers? 1678.
How has it been proved that they eat very few bees? 1004.
What bird has a special liking for the long haired caterpillars and potato bugs? 1929.
How do the crows make up for their damage to a farmer's cornfield? 482.
How do the crows like corn that has been dipped in tar? 482.
What sort of a scare-crow makes these wily birds very suspicious? 482.
How are toads of great benefit to man? 1918.
What kind of bats settle on the backs of horses and cattle and suck blood? 180.
Why is the bat a splendid "night policeman"? 180.

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What did the Mormons do in irrigation? 940.
What are the provisions of the Reclamation Act? 940.
When was the first completed works opened? 941.
Where will be the largest artificial lake in the world? 941.
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What has irrigation done for Riverside, Cal.? 1617, 309.
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Where are the national forests located? 693.
How does forest soil help the water supply? 694.
What is the Forest Service Office? 693.
How can a position be obtained in the Forest Service? 693.
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Why did anatomical study begin with the most complex animals instead of with the simplest? 68.
What difficulties beset the pioneer anatomists? 68.
How did Aristotle gain much of his knowledge of anatomy? 68.

When was the dissection of the human body first legalized? 68.
Who was the accepted authority on anatomy for fourteen centuries? 68.
Whose book laid the foundations of modern anatomy? 68.
What school attracted students from all over Europe? 68.
In what century was the study of human anatomy well established? 68.
What made the subject one of great interest? 68.
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What questions does physiology attempt to answer? 1486.
Who made physiology an independent study? 1486.
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What subjects are dealt with under "nutrition"? 1486.
What does "relation" imply? 1486.
What does "reproduction" consider? 1486.
What is hygiene? 905.
What two men have contributed most largely to this science? 905.

SKELETON.

In a broad sense, what does the term skeleton include? 1763.
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What two uses are served by these hard parts? 1763.
How many separate bones are there in the human skeleton? 1763.
How many bones has the skull in early adult life? 1763.
Is this number the same for youth and for old age? 1763-4.
How many bones are there originally in the spinal column? 1763-4.
What changes take place? 1764.
How many ribs are there? 1764.
How many bones are there in the arm? 1764.
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What holds the bones together? 1764.

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What is the skull? 1764.
What similarity is there between the skulls of fishes and mammals? 1764.
What was the vertebral theory of the skull? 1764.
What great poet held this theory? 1764.
How did Huxley show this theory to be false? 1764.
What is the outer covering of the skull called? 1687.
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What is the office of the bones? 242.
Of what two substances is bone composed? 242.
What different results are obtained by burning and by soaking in acids? 242.
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What is muscle? 1283.
Of what is muscular tissue composed? 1283.
What part does it serve? 1283.
Are the simpler animals provided with muscles? 1283.
Upon what do their movements depend? 1283.

Where in the plane of life do muscles first appear? 1283.
What are the three varieties of muscles? 1283.
How many muscles are there in the human body? 1283.
What governs the naming of the muscles? 1283.
When a muscle acts, does it expand or contract? 1283-4.

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What is the common name for cartilage? 806.
What use is served by temporary gristles? 806.
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Of what does skin consist? 1764.
What is the composition of the dermis? 1764.
How are the scales of the epidermis removed and renewed? 1764.
What gives color to the skin? 1764.
What and where are the sweat glands? 1764.
What are some of the outgrowths from the epidermis? 1764.
What are the offices of the skin? 1764.
If the body should be covered with varnish or leaf metal, what would be the result? 1764.

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What are the nerves? 1320.
What are the two kinds of nervous tissue? 1320.
How many cranial nerves are there? 1320.
How many spinal nerves are there? 1320.
What is the difference in the development of the motor and sensory nerves? 1320-21.
What is the course of the twelve pairs of cranial nerves? 1321.

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How do the fore limbs in the different vertebrates compare? 833.
Of what does the hand proper consist? 833.
How many bones are there in the human hand? 833.
How do philosophers regard the adaptability of the hand? 833.

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What is the structure of the human foot? 690.
What is a plantigrade foot? 690.
What is a digitigrade foot? 690.
What animals stand upon a single toe? 690.
What are the odd-toed animals? 690.
What is the history of the horse's modified foot? 690.

TEETH.

Why are teeth important to naturalists in classifications? 1880.
Why are they important to students of fossil life? 1880.
What is the structure of the teeth of mammals? 1880.
What is the hardest substance in the human body? 1880.
How many teeth has man? 1880.
What are the four kinds of teeth? 1880.
What are the two sets of teeth? 1880.

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What two men originated the cell doctrine? 68, 355.
What is this doctrine? 355.
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Are cells uniform in size or shape, or do they vary? 356.
To what tissues was this theory first thought to be limited? 356.
What was it gradually seen to include? 356.
What wrong idea did Schleiden and Schwann have regarding the cells? 356.
What live substance fills the cells? 356.
Who established the protoplasm theory? 356, 1554.
In the light of this theory, how is the cell defined? 1554.
Is all protoplasm alike? 1554.
How are new cells derived? 356.

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What are the three coats of the eyeball? 643.
What is the vitreous humor? 643-4.
The aqueous humor? 644.
What is the pupil? 644.
What makes it vary in size? 644.
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What is the yellow spot of the eye? 644.
What is the optic nerve? 644.
What is the blind spot? 644.
Does the eye itself do the seeing? 644.
When is a person short-sighted? 644.
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How is the eye accommodated for a different focus? 644.

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What is the ear? 572.
In the simpler forms of life, how is the ear constructed? 572.
How does the ear start in all vertebral animals? 572.
What is the outer ear? 572.
What separates it from the middle ear? 572.
What are the three bones of the middle ear? 572.
What is the eustachian tube? 572.
How does the middle ear in birds and reptiles differ from that in the higher animals? 572.
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What are the organs of Corti? 573.

NOSE.

Can some animals smell, though they have no nose? 1362.
What sort of an organ is the nose? 1362.

TONGUE.

What is the tongue? 1922.
What is the bridle of the tongue? 1922.
What parts of the tongue are most sensitive to taste? 1873.
What must be done to a substance before it can be tasted? 1873.
What substances are easily tasted even when greatly diluted? 1874.
What are the two sets of muscles governing the tongue? 1922.

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What is the central nervous system? 257.
What is the general nature of the changes from the brains of the simpler to those of the higher animals? 257-8.
Of what does the gray matter of the cortex consist? 258.
How is the cortex connected with other parts of the brain? 258.
What are the various kinds of fibers? 258.
What is the relation between certain groups of nerve cells and particular activities of the body? 258.
Why is any injury to the medulla oblongata very serious? 258.

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What are the two kinds of respiratory organs? 1603.
What is the essence of respiration? 1603.
Is it of the same nature in all animals and in plants? 1603.
In what plane of animal life do lungs first appear instead of gills? 1603.
What is the structure of the lungs in man? 1603.
What are the bronchial tubes? 1603.
What exchanges take place in the capillaries? 1603, 229.
What two kinds of respiration take place in the lungs? 1603.

HEART.

What is the function of the heart? 853.
Is it present in both vertebrate and invertebrate animals? 853.

What animals have two-chambered hearts? 853.
What animals have three-chambered hearts? 854.
What animals have four-chambered hearts? 854.
In the embryo of the higher animals, what changes take place in the heart? 854.
What is the structure of the heart in man? 854.
What is the difference between veins and arteries? 854.
What is the great aorta? 113.
Who gave it its name? 113.
What is the pulmonary artery? 113.
What are the two circulations? 113.
Who demonstrated the circulation of the blood? 67, 1486.
What is the function of the blood? 228.
What sort of an exchange does it carry on with the tissues? 228-9.
Of what is blood composed? 229.
What do the red corpuscles carry? 229.
What powers do the white corpuscles have? 229.
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What are its functions? 1126.

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What is saliva? 1665.
What is the stomach? 1831.
Is this organ present in all animals? 1831.
How many coats has the stomach? 1831.
What juice is secreted by the stomach? 1831.
What juice is secreted by the intestine? 1831.
Which of these juices is most effective in digestion? 1831.
What is chyme? 1831.

LIVER.

What is the liver? 1102.
What is its structure? 1102.
What are the offices of the liver? 1102.
What is there peculiar about the circulation in the liver? 1102.

HYGIENE.

What is the aim of hygiene? 905.
What is hygiene called? 905.
What is included in personal hygiene? 905.
What does the health officer look after? 905.
How did John Howard do away with jail-fever? 905.
What did Captain Cook do for scurvy? 905.
When was vaccination introduced into practice? 905.
What is the present condition of hygiene in every large town? 905.
Why are seaports watched? 905.
How did John Howard get his ideas of prison reform? 892.
What captain took such care of his crew that only one seaman died in three years? 449.
Who was first vaccinated with perfect success? 969.
What has cowpox to do with smallpox? 969.
What is the temperature of living rooms in the U. S. and Europe? 856.
What three systems of heating are in use and how do they compare in cost? 856.
Why is a mixed diet best? 690.
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ASTRONOMY

Which is probably the oldest of the sciences? 127.
At what early date was it already well systematized? 127.
To what two men was this advancement due? 127.
At this time, what did the Greeks know concerning the fixed stars and the planets? 127.
Concerning latitude and longitude? 127.
Concerning eclipses and the equinoxes? 127.

What Alexandrian scholar wrote a complete treatise on astronomy? 1558.
Whose catalogue gave the positions of 1,088 stars? 128.
With what astronomer does the modern science begin? 128.
How did he regard the sun in connection with the solar system? 128, 451.
How had the Greeks considered this? 128, 451.
What two phenomena of gravity and light made it almost certain that the earth is in rotation? 128.
Who discovered these phenomena? 128.
What discovery of Newton's practically completed the proof of the Copernican theory? 128
In the seventeenth century, what invention gave a great impulse to astronomical study? 128.
What has caused the advancement in our knowledge of the solar and stellar systems? 128.
What science has proved of the greatest aid in astronomical investigation? 1476.
What are the four main branches of astronomy? 128.
What does general astronomy include? 128.
What does mathematical astronomy deal with? 128.
What work comes under the head of practical astronomy? 128.
What is meant by astrophysics? 128.
What are the fundamental instruments required? 128.
What is the difference between an observatory and a laboratory? 1369.
What telescopes are the finest in the world? 1885.
Where is the famous Yerkes observatory? 1369.
Who invented the telescope? 1885.
What sort of a glass was Galileo's telescope? 1885.
What is the twofold purpose of the telescope? 1885.
Why do we regard the sun as the most important of the fixed stars? 128, 1848.
How far distant is the sun from the earth? 1848.
If a child had an arm long enough to reach the sun, how old would he be before he felt the burn? 1848.
What is the diameter of the sun? 1848.
Why would the weight of an ordinary man increase so at the sun's surface that he would not be able to stand erect? 1848.
How do the spots on the sun determine the period of the sun's rotation? 1848.
Why is it probable that at some time the earth was split off from the sun? 1848.
What is the photosphere? 1848.
What is the chromosphere? 1848.
What is the corona? 1848.
What produces the twilight? 1848.

THE PLANETS.

How do the planets differ from the stars? 128, 1499.
How many planets are there? 128.
How many were known to the ancients? 1499.
How was the prediction concerning Neptune fulfilled? 1499.
Which planet is nearest the sun? 1500.
Which planet is farthest from the sun? 1500.
Which planet most nearly resembles the earth? 1500.
Why are the transits of Venus important? 1935.
Which planet has two satellites? 1500.
Which is the largest of the planets? 1500.
Which planet has five satellites? 1500.
Which planet has a system of rings and eight satellites? 1500.
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THE EARTH.

What is the distance of the earth from the sun? 573.
What did the ancients believe concerning the earth? 573.

What proofs are there that the earth is round? 573.
How old is the earth estimated to be? 573.
What are the four principal motions of the earth? 573.
When is the summer solstice? 574.
When is the winter solstice? 574.
On what days occur the vernal and autumnal equinoxes? 574.
What are the five zones? 574.
At what highest points north and south do the sun's rays fall vertically? 574.

ASTEROIDS.

How do the heat of the sun and the circulation of water affect the earth's surface? 574.
What are the asteroids? 126.
How has photography helped to discover them? 126.
Why was the discovery of Eros important? 126.

COMETS.

What bodies visit the solar system from other parts of the universe? 128, 432.
Of what three parts are comets composed? 432.
What comets may be seen but once, and what comets have been observed repeatedly? 433.
Where do we find a spectrum identical with that of a comet? 433.
What mystery is there in connection with the tail of a comet? 433.
What comet will return in 1911? 433.

THE MOON.

What is the name of the earth's satellite? 1259.
What is the distance of the moon from the earth? 1259.
Why could a man standing on the moon throw a stone six times as far as he could if on the earth? 1259.
How do we know that the moon has neither atmosphere nor water? 1259.
What various phases does the moon present? 1259.
What are Kepler's three laws of planetary motion? 1900.

ECLIPSES.

What is a solar eclipse? 579.
What is a lunar eclipse? 579.
What is the difference between a total and an annular eclipse? 579.
What conditions are necessary for a solar eclipse? 579.

METEORS.

When are shooting stars called meteoric stones? 129.
Why is it that the earth is unharmed by the seven and a half million meteors met with daily? 1212.
Of what materials are ærolites composed? 1212.
What are fireballs? 1212.
What are radiants? 1212.
When was the most wonderful display of meteors ever seen? 1212.
What is the cause of a meteoric shower? 1212.
What is the connection between comets and meteors? 1212.

STARS.

What has the spectroscope revealed concerning the "fixed stars"? 1813.
What determines the grouping of the stars? 1813.
How many groups are there? 1813.
How many stars are there of the first magnitude? 1813.
What important stars belong to the second group? 1813.
How many stars may be seen without the aid of a glass? 1813.
What is the name of the earth's nearest neighbor? 1813, 128.
Do the fixed stars move? 1813.
What is the zodiac? 2132.
How many signs are there in the zodiac? 2132.

How many constellations? 2132.
Do the signs and constellations of the same names always coincide? 2132.
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What is the nebular hypothesis? 1030.
Who originated this theory? 1030.
What is the rival to the nebular hypothesis? 747.
What does it affirm? 747.
What are new stars? 1331.
What is the most probable theory concerning their origin? 1331.
What is the brightest star in the heavens? 540.
What is the brightest constellation in the northern heavens? 1394.
Where is the Southern Cross? 1787.

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What president was taught to write by his wife? 975.
How did Sulla get rid of 3,000 of his enemies? 1845.
Who said: "I feel a better man for reading Cicero"? 398.
Who divorced Henry VIII from Catherine? 474.
What ruler was deposed on account of her charities? 608.
Who "rang the bell that called the other wits together"? 154.
Who said: "England expects every man to do his duty"? 1319.
What celebrated gardener traveled on foot through Europe to study parks? 1380.
Why did President Jackson carry a loaded pistol for 30 years? 953.
Who was so shy he could not stand up in school to speak pieces? 2063.
Who introduced "shirt sleeve" diplomacy into Europe? 709.
When did Sheridan say: "Face the other way, boys; we are going back"? 1740.
How does Sheridan rank with the greatest commanders in history? 1739.
Who was the hardest fighter among the Confederates? 1114.
What did Jefferson Davis say in his last message? 508.
Did Napoleon succeed in his first attempt at revolution? 1301.
What caused his defeat at Waterloo? 1302.
Who educated Alexander the Great? 44.
What city did he burn while drunk? 44.
What town did he name after his favorite horse? 44.
At what age did he die, the master of the world? 44.
What Revolutionary general stands second to Washington? 803
Who shot "Stonewall" Jackson? 954.
Who had the "clearest head and firmest heart in Congress"? 11.
What general was called the Rock of Chickamauga? 1904.
Who was General Tom Thumb? 565.
What statesman denounced war to decide national questions? 1847.
What family furnished three American ministers to England? 10.
Who gave $1,000,000 for the army in the War of Independence? 1265.
What general was thanked by Congress for valor at Gettysburg? 1194.
What American actress showed that stage life may be pure? 70.
Who seized the Confederate commissioners to England in 1861? 2083.
Who rendered the Dred-Scot decision in 1857? 1869.
Who was the greatest and wisest of Mogul emperors? 35.
When was the golden age of American oratory? 406.
What American statesman was the Great Pacificator? 406.
What American declined the title of baron from Queen Victoria? 1433.
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What great idea did Fahrenheit conceive? 645.
Who was the "Good Queen" in the 18th century? 1118.
How is Demosthenes distinguished above every other orator? 519.
Who said: "O Liberty, what crimes are committed in thy name"? 1625.
What famous writer on education believed he was hated by children? 1638.
Who called America "the harbinger of French liberty"? 1902.

Why was Thomas Hart Benton called Old Bullion? 201.
How did the Indian brigadier-general, Tecumseh, die? 1880.
What college was Garfield president of at 26 years? 736.
What Revolutionary general spent his fortune to clothe his men? 1825.
Whose speeches are unrivalled in the history of the English bar? 625.
How did Jackson win the title of Old Hickory? 952.
Who was Robert Emmet's sweetheart? 488.
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What was the real motive of the "Mississippi Scheme"? 1038.
Who tried suicide at 18, and later founded England's Indian Empire? 411.
What are the only two blots on his character? 411.
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When was Russia's first treaty with the U. S. made? 282.
Who captured the first British ships in the War of 1812? 1530.
Who was hanged in the full uniform of a British officer? 71.
When was Benedict Arnold a deserter from the American army? 109.
When did all Europe unite against Napoleon? 130.
What made the Indians believe that Washington had a charmed life? 2048.
What was the only time Henry Clay changed his mind? 406.
Who was the greatest orator of the ancient church? 396.
Why was he banished to Taurus Mountains? 396.
What did Pythagoras say when he saw a dog beaten? 1567.
Who was the Iron Chancellor? 220.
Who took his own life that his wife might wed his king? 1722.
What discovery was made through quinine or Peruvian bark? 824.
How did a Chinese mandarin address a letter to "Boerhaave"? 234.
Who founded the English navy? 48.
Who founded the city of London? 1111.
Of whom is it said: "No man so good was ever so bad a king"? 368.
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Who was the Merry Monarch? 369.
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What king said: "Who will rid me of this pestilent priest"? 189.
With whom did Gladstone carry on a parliamentary debate for twenty-four years? 771.
Why is the reign of Richard II an interesting epoch? 1611.
What gave nearly 1,000,000 men the right to vote in 1867? 534.
Who was the husband of Queen Victoria? 40.
What are the family relations of the king of England? 588.
Why is Queen Victoria's daughter's marriage remarkable? 96.
Who gave Sir Philip Sidney 30,000,000 acres of undiscovered land? 1752.
Who is the patron saint of Norway? 1378.
Why is Arminius called the *German Liberator*? 105.
What made Swift the most popular man in all Ireland? 1856.
What famous trial was won by Parnell over the London Times? 1425.
How many people did St. Patrick baptize? 1429.
How old was St. Patrick when he died? 1429.
What was O'Connell's dying request? 1371.
How did the Scotch spend the night before the battle of Bannockburn? 278.
Where were the bones of Robert Bruce discovered after 500 years' burial? 278.
What famous Scotchman was called Bell the Cat? 546.
Why did Robert III of Scotland die of grief? 1619.
What did Mazarin on his deathbed say about Colbert? 420.
Who is known as the queen of letter writers? 1729.
Why did Napoleon hate Madame de Stael? 1807.
Who was the earliest historian of France? 704.
What drove away 400,000 of the best citizens of France? 704.
What did Savonarola call the Bonfire of Vanities? 1684.
Why did Octavia marry Mark Antony? 1371.
How did a famous Roman frighten his would-be executioner? 1172.
Who was the saintliest of pagans? 139.

What Greek tragedian first built a stage? 21.
Why did Achilles sulk in his tent? 7.
Why did Ulysses disguise himself as a pedlar? 7.
Who was the greatest poet and king of Israel? 507.
Who built the Suez Canal? 1058.
What stamped Marlborough the greatest general in Europe? 1173.
What hero slept without a blanket and marched without a hat? 1172.
What strange request did Solon make about his body? 1779.
Who was the founder of the science of political economy? 1517.
Who was the first surgeon to make surgery a science? 450.
What saved Crœsus' life when he was about to be burned? 480.
Who was called the Indian Apostle and what great work did he do? 606.
What president was known as Old Rough and Ready? 1876.
What famous general put to flight ten thousand Turks with but three hundred horsemen? 983.
Who was the first secretary of the W. C. T. U.? 2085.
What Confederate general was the last to surrender? 1769.
Who was the first chief justice of the United States? 966.
Who organized the American Antislavery Society? 738.
Who were called the Great Trio of American debaters? 308.
Who was the founder of the first dispensary in America? 1644.
Whose was the first marriage in Plymouth Colony? 2096.
For what was Louis Pasteur distinguished? 1428.
Who was Hannah Dustin? 439.
What caused John Tyler's administration to be displeasing to the Whig party? 1961.
Who was sometimes called the Backwoods Preacher? 344.
What made Charles Goodyear famous? 780.
Whose appointment as minister to England did the Senate refuse to confirm in 1831? 2001.
How did Theodosius make peace with the dreaded Goths? 1900.
Who was the hero of the Thirty Years' War? 817.
How did Clovis receive the title of Most Christian King? 413.
Who was the first lady physician in America? 224.
Who is the father of the modern system of profit sharing? 1044.
Who introduced chloroform into medical use? 1760.
Who discovered vaccination, and how? 969.
What great reformer caused all the women of Florence to fling down their costly jewels in the public square? 1684.
Who was the Washington of South America? 238.
What distinguished American scientist, when almost blind, pursued his studies with great proficiency? 2125.
What general gained the title of Mad Anthony? 2060.
Who introduced inoculation from smallpox into England? 969.
Who founded the House of York and what caused his death? 2124.
Who founded the Bank of England? 1429.
Who was the first Englishman to engage in the slave trade? 851.
Who was the first president of the Royal Academy? 1605.
What king of England was surnamed the Lion Hearted? 1610.
How did Sir Arthur Wellesley come to be Duke of Wellington? 2067.
What famous English architect in his youth was called That Miracle of a Youth? 2112.
Who is called the most popular national hero of Scotland? 2036.
Who established the first printing press in Russia? 949.
Who were the two greatest generals of the period during the civil war in France? 1953.
Who introduced the potato into France? 1954.
Who was the most illustrious officer ever in command of the French navy? 1844.
What two brothers, aged four years and seventeen years, respectively, became joint emperors of the Western Roman Empire? 1998.
What Roman emperor was called the Father of His Country? 81.
Who was the greatest sculptor of ancient Greece? 1465.
Who introduced European civilization into Egypt? 592.

What queen was called Bloody Mary, and why? 1180.
What distinguished traveler traveled 8,000 miles on foot in four years through Africa with no white companion? 557.
How did Philip the Bold win his title? 1466.
What earl had his ears boxed by the queen? 627.
What queen planned the ruin of Cardinal Wolsey? 2104.

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From what sciences is it easily separated? 212.
With what sciences is it closely connected? 212.
When did modern biology originate? 212.
What Greek philosopher is the best representative of the knowledge of his time about life? 213.
A few centuries later, what arrest took place? 213.
Who were the men who again started independent observation? 213.
In what does their work chiefly consist? 213.
In regarding animals and plants, what were the first things noticed? 213.
How were organisms studied at this time? 213.
What method did Linnæus introduce for naming plants and animals? 213.
How did his work prepare the way for the discussion of the origin of species? 213.
What was the next step in the study of organisms? 213.
In consequence of this what new science was founded by Cuvier? 213. By Jussieu? 213.
What was the important study that Bichat engaged in extensively? 213.
What science did he found? 213.
What instrument opened a new world to naturalists? 213.
What new idea took definite form under the observations of Schleiden and Schwann? 213.
How does their discovery unite all animals and plants? 213.
What is their theory called? 213-4.
What is the importance of the fact that the egg of all animals and the ovule of all plants is a single cell? 214.
What new theory corrected the imperfections of the cell theory? 214.
How does Huxley define protoplasm? 1554.
Of what is it composed? 1554.
Is protoplasm alike in all human beings? 1554.
Why is the amœba of great interest to biologists? 214.
How do its activities compare with those of higher organisms? 214.
What properties of protoplasm distinguish it absolutely from every form of non-living matter? 214.
Is protoplasm a complex substance? 214.
What has the physiological division of labor among the cells led to? 214.
What are the gradations between the single-celled and the many-celled conditions? 214.
In what four ways does biology consider animals and plants? 215.
How may animals and plants be considered in regard to their structure? 215.
In what two directions does the distribution of animals and plants extend? 215.
Why is the succession of life in the rocks very interesting? 215.
How does biology differ from botany and zoölogy? 215.
What three discoveries most distinctly mark biological advance during the nineteenth century? 215.
What has the extension of knowledge regarding microbes and bacteria led to? 215.

What was the new discussion of the questions of the spontaneous origin of life? 215.
What kinds of experiments upon living forms have been made in the latter part of the century? 215.

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How did Aristotle and Theophrastus classify all plants? 249.
Who substituted for this a more complete but artificial system? 249.
What do natural systems of classification attempt? 249.
What is taxonomy? 250.
What did the discovery of the microscope lead to? 250.
What does the science of morphology deal with? 250.
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Into what other subjects is the study of botany divided? 250.
What should any elementary study of botany include? 250.
What plants are parasites, sometimes killing their hosts? 724.
How many species of grass are there? 795.
Which cereal feeds the most human beings? 1610.
What country produces the best wheat in the world? 1455.
How much wheat does it take to make a barrel of flour? 685.
What was the wheat crop of the world in 1906? 2073-4.
To what genus of trees do the redwoods of California belong? 1724.
In what class of trees does the seed sprout before the fruit falls? 1158.
What tree sends its branches down into the ground, thus forming new trunks? 170.
What is the most valuable of East India woods? 1879.
Where is there a famous chestnut tree 163 feet in diameter? 629.
Where did the common cherry tree come from? 377.
Where is the satinwood found? 1682.
Where does the best ebony come from? 578.
What microscopic plants produce and spread disease? 155.
What genus of Mexican plants yields fiber, soap and beverages? 26.
What is the difference between algæ and fungi? 48.
What plant did the ancient Egyptians use to write upon? 1418.
What kind of plants are called lianas? 1062.
How does cotton grow? 464.
Where was tobacco first known? 1918.
What is the nativity of grapefruit? 795.
What is said to be the most delicious of all fruits? 1158.
Of what is the myrtle a symbol? 1294.
What is the lotus? 1116.
From what flower is opium obtained? 1528.
What substance in the larkspur is very poisonous? 1032.
From what is the oil of sweet bay taken? 1036.
What Chinese order of honor is named from one of our favorite flowers? 396.
What flower has a name meaning "little darling"? 1223.
How did the narcissus get its name? 1302.
What is smilax used for besides decorations? 1681.
Where did the tuberose first come from? 1948.
What are puff balls? 1559.
Will seeds grow after being kept for years? 1718.
What North American tree is fed upon by the silkworm? 1275.

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With what does the science of chemistry deal? 374.
When do chemical changes take place? 374.
What are some examples of chemical changes? 374-5.
During these changes is there any gain or loss in total weight? 375.

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What element composes about one-fifth of the atmosphere, eight-ninths of pure water and nearly one-half of the earth's crust? 375.
What is the next most abundant element? 375.
How was the term "organic chemistry" originally used? 375.
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What substances are now classed under inorganic chemistry? 375.
How may mixtures and chemical compounds be distinguished? 375.
What is an atom? 376.
How can we explain the existence of several compounds of the same composition? 376.
Who discovered oxygen? 376.
Who founded the atomic theory? 376.
Who discovered nitrogen in the atmosphere? 1353.
Who is said to have held the first rank among chemists? 509.
What are acids? 7.
What do all acids contain? 7.
What are the properties of nearly all acids? 7.
What acid gives vinegar its sour taste? 7.
What acid is found in bitter almonds and in peach stones? 7.
What is carbonic acid? 332-3.
What gives the sparkling appearance to soda waters? 333.
What especially distinguishes an alkaline substance? 50.
When alkalies and acids unite, what results? 50.
What effect have alkalies and acids on each other? 50.
What did early chemists call "vital air"? 1406.
Why does a man not feel the weight of thirty thousand pounds that the air presses upon him? 33.
What are the principal elements in air? 33.
Do plants and animals breathe the same or different elements? 34.
What is ozone? 1406-7.
What is the lightest gas known? 903.
What liquid contains all the elements needed on the human body? 1225.
What produces cream on milk? 1225.
What are examples of complete foods? 690.
What is opium? 1386.
What peculiar effect has hashish on the human system? 847.
How does alcohol affect the system? 42.
How does nitro-glycerine compare with gunpowder in power? 1354.
What is the process of distillation? 535.
What causes fermentation? 656.
Who perfected the mode of mixing colors with oil? 643.
What is the process of distillation of vegetable perfumes? 1452.
How is soap made transparent? 1775.
From what is bay rum made? 185.
From what is plaster of paris made? 819.
From what is isinglass made? 945.
What is naphtha? 1300.
What valuable medicine is made from the bark of the cinchona tree? 1576.
Is sulphur a mineral or vegetable compound? 1846.
What is phosphorus? 1475.
Who discovered it and when? 1475.
What gas, when changed to a liquid, is used in the manufacture of ice? 64.
What is the philosopher's stone? 41.

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What was the original meaning of the word clock? 412.
What is the meaning of the letters R. S. V. P.? 3.
When was perpetual motion overthrown? 1454.
What is an Irish wake? 2033.
Who invented dice and money? 1126.
What metal is 3,000 times as valuable as gold? 1580.
Who were the first magicians? 1144.
Who invented the extract of beef? 1066.
What is the oldest inhabited city in the world? 498.
How can you tell mushrooms from toadstools? 1284.
In what country was a wife buried with her husband? 1852.
What religious brotherhood commits murder? 1908.
What plant lives entirely on air? 622.
What plant catches insects and uses them for food? 338.
What American won a prize for picking the Bramah lock? 1106.
Who founded the S. P. C. A.? 203.
How is manila rope related to the banana? 861.
What is the scientific name of a boy's top? 819, 1923.
What is brown coal? 1070.
Who invented the clock? 411.
How did April Fool's day originate? 86.
What was the ducking stool? 557.
Who got up the present system of weather signals? 853.
What city lost 100,000 people by black death? 683.
When was the first Atlantic cable laid? 301.
What is a boomerang? 244.
What was the Black Hole of Calcutta? 306.
What country is sometimes called the Coffee Republic? 463.
What women use their hoods for cradles? 626.
Who are the Brownies? 646.
What are the Palisades? 894.
What is the laughing hyena? 905.
Who said: "Don't give up the ship"? 1039.
How did the term "gerrymandering" come into use? 761.
What state first adopted Arbor Day? 90.
What was called the Dandy Horse? 210.
What is the Maypole? 1192.
What is the largest obelisk in the world? 1368.
What is a pontoon bridge? 1526.
What is St. Bernard noted for? 1655.
What city represents the entire globe in the languages spoken? 1672.
Where does slavery still exist? 1766.
Where is the Pearl Mosque? 26.
Who is said to have swallowed a $400,000 pearl? 1435.
Who built a throne at a cost of $35,000,000? 1732.
When was the first women's rights convention held? 1811.
What place contains more people to the square mile than any other place in the world? 1335.
What vase is considered the finest specimen of an ancient cameo cut glass that is known? 1533.
What is meant by the Golden Age? 778.
What was the Golden Fleece? 778.
What terms are used for husband and wife by the gypsies? 818.
Who was the Man with the Iron Mask? 939.
What marble arch is said to be the finest in the world? 90.
Tradition says that Washington was never known to swear but once. When? 1252.
In what country is absinthe a popular liquor? 5.
What were the shinbones of animals used for in early times? 1763.
What village was made famous by the number of runaway marriages occurring there? 805.
Where is the celebrated Vallombrosa Abbey? 2000.
What was known as the Hudson Bay Company? 893.
What was the famous Edict of Nantes? 896.

What house of rulers, founded in the beginning of the ninth century, has continued an unbroken chain to the present day? 878.
What are the Homestead Laws? 882.
Where are the largest eggs found? 589.
Where is the largest lock in the world? 1218.
When was the period known as the Middle Ages? 1222.
What does the term Dark Ages indicate? 1222.
What cathedral contains 60,000 statues on the outside in the niches? 1223.
What prince was believed by his countrymen to have discovered America three hundred years before Columbus? 1142.
What woman born in prison became the wife of a king? 1151.
What kind of a garment is a poncho? 1525.
What woman was queen for only nine days? 806.
Where is Mammoth Cave, and what is its size? 1155.
Where are the cultivation and use of tobacco forbidden? 1264.
What people call their country the Flowery Kingdom? 389.
In what country are but few drunkards seen, and why? 390.
What great city in ancient days boasted of having no citizen in want? 1526.
What was the first express company? 642.
Where are the Krupp gun works? 627.
What people sent to Darius every third year four pints of gold dust? 629.
What is the origin of "I came, I saw, I conquered"? 2131.
At what place is the shortest day only three hours and twelve minutes, the longest twenty-one hours and forty-eight minutes? 91.
Where is the noted stone circle, Stonehenge? 1832.
What hermit spent thirty years on a tower? 1842.
Who furnished the money for the Suez Canal? 1843.
What was the Rye House Plot? 1650.
Who vainly offered a city for a ruby? 1641.
What is the largest and finest theater in the world? 1898.
In what countries did they have lake dwellings? 1022.
What nations have done most to improve the artillery service? 115.
In what battle were modern arms first used? 107.
Where is the most famous artesian well? 113.
From what ancient city was the obelisk of Central Park in New York brought? 859.
To whom was the name Puritans first given? 1564.
What is known as a Pyrrhic victory? 1567.
What valuable discoveries were made by Sir William Siemens? 1753.
What was the South Sea Scheme? 1787.
What was the Stamp Act? 1808.
In what island did a three years' drouth cause over thirty thousand people to perish? 330.
What is Cooper Union? 450.
Which one of the seven wonders of the world was set on fire the night Alexander was born, and why? 621.
What city founded in the tenth century contains architectural styles of almost every century since? 689.
What were the Crusades? 483.
Who were the Seven Wise Men? 1727.
What were the Seven Wonders of the World? 1727.
Who were the Seven Sleepers? 1727.
What is meant by the term Sealed Orders? 1714.
Where did the famous exploit of the Maid of Saragossa take place? 1679.
At what ancient harvest festival were slaves banqueted by their master while he served them? 1683.
What led to the expression, "Squatter Sovereignty"? 546.
Who was Confucius? 441.
What queen was crowned king? 395.
What nation uses the most beer? 193.
What is the amount of beer used in the U. S. for each person? 193.
What is the largest bell in the world? 197.

Who were the Mutineers of the Bounty? 1494.
What is the greatest piece of blasting the world has ever known? 226.
What is the Phi Beta Kappa fraternity? 1465.
What is the value of a piaster? 1487; 2111. Of a rap? 2111.
Who were the Picts? 1488.
What was the Gunpowder Plot? 816.
What was the Children's Crusade? 483.
What abolitionist received the name of Ossawattomie? 275.
What is international law? 933.
Who were the buccaneers? 281.
What was the Iron Age? 939.
What was the charge of the Light Brigade? 150.
Who wrote the famous line: "Westward the course of empire takes its way"? 203.
What queen married a brewer because she was so much pleased with his dancing? 1949.
When do equinoxes occur? 622.
What people flatten their children's heads? 394.
What city of eighty thousand people has no hotels? 1576.
Where did Punch and Judy originate? 1561.
What is Pompey's pillar? 1525.
What was the Gordian knot? 781.
Who was known as the Red Prince? 712.
What island is called Sailor's Grave, and why? 1651.
What was the Salic law? 1665.
What people use birds' nests for soup? 247.
When and where was the first clearing house established? 169.
What is the highest volcano in the world? 464.
What people allow snakes to come into their home and believe they are ancestors? 1725.
What was the Stone of Destiny? 1707.
When did riddles first come into use? 1613.
What was the largest merchant vessel ever built? 1743.
What place is called the White Man's Grave? 1754.
When did the first system of shorthand come into use? 1747.
When and by whom was the guillotine introduced? 812.
What is a night dial? 526.
What public woman opposed Lincoln's election? 530.
What kingdom had an army of 10,000 soldiers mostly women? 496.
What city is built over a vein of silver? 2128.
Where were lotteries first known? 1116.
What was the origin of lynch-law? 1126.
How small were horses at one time? 639.

DISCOVERIES AND INVENTIONS

What two brothers have conquered the air? 20.
Who is famous as the inventor of wireless telegraphy? 1169.
Whose experiments laid the foundation for wireless telegraphy? 1882.
What telegraph system will send 150,000 words an hour? 1885.
How may drawings and sketches be sent by electricity? 1881.
When and by whom were roller skates invented? 1763.
What did Elias Howe realize from his sewing machine? 1730.
What is the process of electrotype? 604.
What are the Elgin marbles? 605.
What famous inventor is called the "Wizard of Menlo Park," and how did he get his start? 582.
From what fluid was India ink formerly made? 491.
How are the different colors produced in fireworks? 676-7.
What is the difference between an ordinary and an instantaneous fuze? 726.
What is a petard? 1459.
Who first introduced steel as a material for constructing guns? 1013.
When was the first law of patents passed? 1428.
Who is credited with first unwinding a silk cocoon? 1757.
How long does a patent right last? 1428.

Who perfected the Remington typewriter? 1963.
Whose invention was the foundation of the wealth of the cotton-growing states? 2080.
For what is a telemeter used? 1833.
Who is the inventor of the gas motor? 740.
Whose invention was the starting point for our modern rifle? 1614.
When was gun cotton invented? 815.
What nation is thought to have invented gunpowder? 815.
What three important discoveries were made by means of the Coast Survey? 415.
When was the first microscope made? 1220.
When was nitroglycerine discovered? 1354.
What is the Nobel prize? 1354.
What doctor gave us the word "electric"? 596.
Who invented the linotype and monotype machines? 1962.
Who is undoubtedly the inventor of the telephone? 1884.
When were steel sewing needles first made? 1317.
Where are spectacles said to have been invented? 1793.
What electrical discoveries were made by Stephen Gray? 596.
What important improvements were made by Mr. Sprague in 1887 in electric railroads? 601-2.
What discovery of Witt's must rank as one of the important astronomical discoveries of recent years? 126.
What machine is based on the discoveries of Prof. Ferraris of Italy? 601.
What discovery did Copernicus make? 128.
Where was the first electric railway? 601.
Who invented the needle gun, and when? 553.
When was dynamite invented? 568.
What important discovery did Faraday make with electricity in 1831? 568.
Who invented the grand piano? 623.
Whose invention changed the navies and navigation of the world? 1913.
What art was invented by Senefelder? 1100.
Who built the first lifeboat? 1067.
Who designed the lifeboat, and when? 1067.
How old is the process of tanning skins, and where invented? 1043.
What is the earliest and simplest form of engraving, and by what country was it introduced? 2106.
How are depths of great bodies of water found? 1783.
When was the first typewriter invented? 1963.
Who invented printing with movable type? 817.
Who invented the process of puddling and rolling? 939.
What is the Bessemer process of making steel? 1820.
Who invented the power loom? 343.
When did balloons come into use? 19.
Who discovered the true cause of the tides, and how? 1911.
In what city have nails been manufactured for 300 years? 1298.
What is the origin of the telephone? 1884.
Who designed and built the first locomotive in America? 450.
Where were the first galley boats made? 455.
When was the first fountain pen used? 1443.
What led Edison to the discovery of the phonograph? 1474.
How was paper first made? 1417.
How is papier maché made? 1418.
When and where was the first life-boat built? 1066-7.
How is parchment prepared? 1420.
What is the process of stereotyping? 1823.
Who invented the first steam hammer? 1817.
Who made the "Rocket" steam engine famous, and who was its builder? 1817.
Who invented the stereoscope? 1823.
When and by whom was stereotyping invented? 1823.
When and where was the first telegraph line laid successfully? 1267.
Who was the inventor of glass? 773.
What led to the invention of the spinning jenny? 838.

When and by whom was the first blast furnace worked? 939.
When and by whom was the flint lock gun invented? 814.
Who invented macadamizing, and where first introduced? 1129.
Who invented the spinning mule? 481.
How long has irrigation been practiced? 940.
What was the first cotton mill built in the United States? 465.
Who was the founder of the science of hydrography? 1191.
What important invention did Sir Humphrey Davy make, and what led to the discovery? 1652.
What led to the discovery of the photophone? 1478.
How and by whom was the Silurian system discovered? 1280.
When and by whom was gas invented for use as lighting purposes? 1280.
What is the process of vulcanizing rubber, and who discovered it? 920.
How early was steam used for moving boats? 1818.
What was the first steam vessel to make a voyage? 1818.
What discovery led to the invention of the barometer? 174.
Why are some bricks red and some buff colored? 265.
How is charcoal made? 367.
What led to embalming among the Egyptians? 591.
What is the process of photography? 1476.
In how many seconds will an air brake stop a train going 50 miles an hour? 259.
How are new inventions protected? 1428.

EDUCATION

What college graduated lady physicians in the 12th century? 1987.
May women study at Harvard? 1988.
What college did George Washington endow? 2024.
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Who was the first president of the Royal Academy? 1605.
Who founded the Royal Canadian Academy? 1639.
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How do its members stand against the competition of the world? 1639.
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How did it compare with the best historical paintings? 1227.
What two artists greatly influenced him? 1227.
Why are his later works unrivalled? 1227.
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Who formed the Pre-Raphaelite Brotherhood? 1635.
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Upon what does his reputation rest in painting? 1636.
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Through what discovery did he make important improvements? 1020.
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What trade did he learn? 1656.
Where is one of the most celebrated cameos? 315.
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Who first explained how a geyser works? 762, 289.
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Where does the water of hot springs and geysers come from? 1805.
What are artesian wells? 1806.
Where is the most famous artesian well? 113.
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Why does physiography study the air? 1482.
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What is a rain-gauge? 1583.
Why do fogs need dust-particles? 688.
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How did we find out what lightning is? 1069.
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How much earth does the Mississippi river carry yearly to the gulf? 1240.
How is alluvial land formed? 53.
How does running water degrade the land? 1482.
What is the bottom of a glacier called? 770.
How did Lake Superior copper get down into Indiana? 553.
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What are plant societies? 580.
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What two races comprise two thirds of the world's population? 1578.
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How are North and South America similar? 58.
What is the area of North America? 58.
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What are the Rocky Mountains called in Mexico? 58.
What three countries have Sierra Nevada Mountains? 58.
Are the Appalachians higher or lower than the Rockies? 59.
Where do the Appalachians rise? 59.
What is the character of the prairie country? 59.
What is the Piedmont region? 59, 1489.
What is the nature of the southern end of the continent? 59.
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How many varieties of birds in North America? 59.
What are the trees and grains? 59.
How does the climate of North America vary? 59.
Where are the only successful tea-gardens in America? 1784.
Where is the greatest rainfall? 59.
In the production of what mineral is North America first? 59.

UNITED STATES.

What are the boundaries of the U.S.? 1967.
What are its latitude and longitude? 1967.
What is its longest line east and west? 1967.
What is the longest line north and south? 1967.
What is the total area of the republic? 1967.
What is the length of the entire boundary of the U. S.? 1967.
When it is sunset in Maine, is it sunrise in the U. S.? Where? 1967.
Where are the largest harbors? 1968.
What indentations on the Atlantic coast? 1968.
What bays on the Gulf coast? 1968.
How far is Cuba from Florida? 1968.
What are the two elevated regions of the U. S.? 1968.
Where are the lowlands? 1968.
How far inland are the Appalachians? 1968, 51.
What names do they bear in the various states? 1968.
What are the two highest points of the Appalachians? 1968.
How far are the Rockies from the Mississippi? 1968, 1622.
What is the loftiest peak on the continent? 1968.
What are the navigable rivers of the Atlantic coast? 1968.
Where is the water-power of New England created? 1968.
What two rivers have 10,000 tributaries? 1968.
What makes the prairie regions profitable? 1968.
What is the Mississippi valley? 1968.
What are the rivers of the Pacific slope? 1968.
How many miles of inland navigation in the U. S.? 1968.
What are some of the natural and interesting features in beauty, grandeur and variety of scenery? 1968.
What is the climate of the Atlantic states? 1968.
How does the Pacific climate compare with that of Italy? 1968.
What makes the U. S. a world in itself? 1969.
When does the rain fall on the Pacific coast? 1969.
What minerals give the U. S. first rank in production? 1969.
What country leads in gold production? 1938.
How much of the country was originally forest? 1970.
How many acres of forest are there now? 1970.
Where is the heaviest stand of timber on earth? 1970.
What are the most important fish? 1970.
In what industries does the U S. lead the world? 1970.
How much of the world's manufactures come from the U. S.? 1970.
What are the chemical and allied industries? 1970.
How does the U. S. stand in agriculture? 1970.
How many families live on farms? 1971.
What are the bulk of the exports? 1971.

How does cotton compare with corn as an asset in the U. S.? 1971.
How does hay compare with cotton? 1971.
Where is most of the woodland? 1972.
What rank does lumbering hold in the U. S.? 1972.
What port does half of our foreign trade? 1972.
How many miles of canals are used for transportation? 1972.
What is the length of the 38 principal canals in the U. S.? 1973.
How much of the U. S. foreign commerce is carried in foreign ships? 1973.
How much of the world's railways are in the U. S.? 1973.
How many cables connect the U. S. with Europe? 1973.
What other cables are there? 1972.
How long does it require to send mail from New York to San Francisco? 1973.
Which of the Great Lakes is entirely in the U. S.? 1022.
What summer resorts are planted in deserts of sand? 1112.
What was discovered in N. Y. harbor by the Coast Survey? 415.
Where is the Piedmont region? 1489, 59.
Where is the heaviest rainfall in the U. S.? 1582.
Where are the National Parks? 1306.
What is the great corn state of the Union? 935.
What city was the chief whaling center of the world? 1324.
Where are the "Bad Lands" of the United States? 1786.
What city in the United States is the first naval stores station and second cotton port of the continent? 1683.
What city in the United States is third in importance as to exports? 1330.
When were the first sheep introduced in the United States? 1736.
What state in the Union stands foremost in manufacturing? 1732.
What state furnishes one third of the gold, silver, copper, lead etc. mined in the United States? 1254.
What is the first manufacturing city in the Union? 1332.
What range of mountains have twenty-five peaks, the names of five of them being those of presidents of the United States? 2079.
Why is Oregon much warmer than other places of the same latitude? 1391.
What lake in the United States contains three thousand islands? 900.
Which state of the Union was once covered with a great lake? 1786
What is the longest unnavigable river in the United States? 1786.
What state in the United States contains 10,000 lakes? 1236.
What is the highest mountain peak in the United States outside of Alaska? 308.
How many square miles does the United States contain? 1967.
What is the most famous peak of the Allegheny Mountains? 51.
What two rivers form the source of the Ohio River? 51.
What state in the United States contains an extinct crater that is now one of the deepest freshwater lakes in the world? 1391.
How many miles of railroad in the United States? 1581.
How many miles of railroad in the United States in 1900? 1582.
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What is the value of the salmon fisheries in the U. S.? 1666.
In the United States what grain yields the chief crop? 30.

THE NEW ENGLAND STATES.

How much longer is Maine's tide line than the coast? 1149.
What is the most important stream of New England? 1449.
How does the watershed cross the state? 1150.
What is the temperature of Maine winters? 1149.
Where is one of the largest salmon pools in the world? 1150.
What are 2,000,000 bushels of potatoes used for annually? 1150.
What state has considerable mica deposits? 1325.
How does Vermont compare with New Hampshire in industrial products? 2012.
Why is Massachusetts the least agricultural state in the Union? 1185.

Where is the most notable tunnel in the U. S.? 885.
How does Boston rank in foreign trade? 249.
What mines have been worked in Connecticut since 1730? 444.
What is the character of silverware made in Rhode Island? 1607.

THE ATLANTIC STATES.

Why is New York the Empire State? 1331.
What enables New York to lead in manufactured goods? 1332.
What is the extent of exports and imports? 1333.
How many minutes does it take to walk across New York City? 1334.
What supports the weight of New York City? 1335.
What are the five boroughs of New York City? 1336.
What are the Palisades? 894.
How long is the Erie Canal? 321.
What two canals are used in New Jersey? 1328.
Where is the seat of the silk trade? 1327.
What river forms the entire eastern boundary of Pennsylvania? 1446.
Where are the largest Bessemer mills in the world? 1447.
How does Pennsylvania compare with New York in agriculture? 1448.
In what products does Pennsylvania lead all states? 1447.
What are the four divisions of the mountain systems of Pennsylvania? 1446.
What rank does Philadelphia hold as a manufacturing city? 1466.
Of what importance is Allegheny City? 51.
How does Delaware compare with Rhode Island in size? 516.
How does the Mason and Dixon line bound Maryland? 1181.
What is the leading industry of Maryland? 1182.
What two canals in Maryland? 1182.
What are the largest meat-packing industries on the Atlantic seaboard? 164.
What is tidewater Virginia? 2023.
What mines of Virginia are the largest in the world? 2023.
What two products are peculiar to Virginia? 2024.
What two natural wonders in Virginia? 2023, 1124.
Why is West Virginia called the Switzerland of America? 2071.
What is the area of the coal fields? 2071.

THE SOUTHERN STATES.

How does North Carolina compare in size with Pennsylvania? 1357.
Where are the government hatcheries? 1357.
How does it compare with Kentucky for tobacco? 1357.
What is said of its wonderful waterpower? 1357.
How does it lead the southern states? 1357.
What are the low country and the up country of South Carolina? 1784.
How does this state lead the world? 1784.
Where are the beds of phosphate rock? 1784.
Where is the safest harbor on the Atlantic coast? 371.
How does Georgia compare in size with New England? 752.
How many climatic belts in the state? 753.
Where is the famous Georgia marble found? 753.
What valuable cotton is grown in Georgia? 753.
Where is the largest tobacco farm in the world? 753.
Where is the leading naval stores port in the world? 1683.
How many clear days in the year in Florida? 684.
What are its most important crops? Minerals? 684.
What is the leading industry of the state? 684.
What are the Florida Keys? 684.
What is the greatest engineering feat of recent years? 684.
What city is built on a coral island? 1001.
What crop is grown in the famous black belt of Alabama? 35.
What rank has the state in iron ore production? 36.
How many miles of navigable rivers? 36.
What is the only seaport of Alabama? 1244.
How are funds raised for the levees in Mississippi? 1240.
What is the most valuable tree? 1240.

How does the cotton crop compare with Texas? 1240.
Why is the state of Tennessee divided into sections? 1889.
Where is the garden of Tennessee? 1889.
What do the mountain caverns contain? 1889.
How is Memphis supplied with drinking water? 1202.
How does the soil of the east of Oklahoma differ from that of the west? 1377.
What is the character of the surface? 1376.
Where are "some of the richest oil fields in America"? 1377.
How is the name of the state of Arkansas pronounced? 100.
What success in the culture of rice has the government had? 101.
Where is the largest oar factory in the world? 101.
What unique distinction has Hot Springs? 101.
Where are the famous whetstone quarries? 888.
How long is the Texas coast line? 1985.
Where does most of the salt used in the state come from? 1895.
How does Texas rank in cotton production? 1895.
Where is the Pan-Handle of Texas? 1895.

THE CENTRAL STATES.

How does Kentucky lead in navigable streams? 998.
How has the climate improved the people? 998.
What is wonderful about the soil? 998.
What is said of the hardwood forests? 998.
What is said of tobacco, hemp and horsebreeding? 999.
What is the shape of Ohio? 1373.
What comment has been made on the climate? 1373.
What beautiful stone does the state produce? 1374.
How many million barrels of petroleum are produced? 1374.
Where is one of the largest rolling mills in the world? 1374.
Why is Cleveland called the Forest City? 409.
What celebrated pottery is made in Cincinnati? 400.
How does the state of Indiana rank in size? 920.
Where is one of the most fertile regions in the world? 920.
How many miles of electric lines? 921.
What prevented Lake Michigan from flowing into the Illinois river? 915.
How deep is the vegetable soil of Illinois? 915.
How does the state rank in railroads? 916.
How much of the U. S. coal fields are in the state? 915.
What caused mail wagons to disappear in Chicago? 382.
What waters originally covered the site of Chicago? 379.
Where is the largest canal lock in the world? 1218.
How much of the total iron ore production comes from Michigan? 1218.
What commercial event happens twice a year in Grand Rapids? 793.
How does Michigan rank as a fruit state? 1219.
What magnificent park is connected with Detroit? 523.
What is most of the surface of Wisconsin covered with? 2098.
What is its rank as a manufacturing state? 2099.
How many dairy cows in Wisconsin? 2098.
Why is Milwaukee called the Cream City? 1229.
What rank does Milwaukee hold as a grain port? 1229.
What three great river systems have their source in Minnesota? 1236.
What is the best wheat in the world? 1236.
Where are the Big Woods? 1236.
Where is the largest primary wheat market in the world? 1235.
What are the Twin Cities? 1661.
What is remarkable about the Red River tract of North Dakota? 1358.
What salt lake in the state has no outlet? 1358.
What is the enormous yield of wheat? 1358.
Where are the Bad Lands of South Dakota? 1786.
What is the principal grain of the state? 1786.
What industries flourish in the state? 1786.
What are nearly all buildings in Sioux Falls made of? 1761.

What is the character of the surface of Iowa? 935.
What are the two hydrographic regions? 935.
How does Iowa rank in the production of corn? 935.
What is the annual production of the brick and clay factories of Des Moines? 523.
Why are there little extremes of heat or cold in Nebraska? 1314.
What is a drawback to manufacturing? 1314.
Where are the railways chiefly located? 1315.
Where is the largest creamery in the U. S.? 1073.
What curious caverns in the state of Missouri? 1341.
Why is the climate marked by extremes? 1241.
What mineral does it produce more than any other state? 1241.
What is the immense income of the Missouri Botanical Garden? 1660.
What important geographical position has Kansas? 988.
What has increased the skill of the Kansas farmers? 989.
Where is one of the most modern beet-sugar factories in the world? 990.
In what industry does Kansas rank first? 990.
How does Kansas stand in wheat production? 990.
What great industry is carried on in Kansas City, Kansas, and Kansas City, Mo.? 991.

THE NORTHWESTERN STATES.

What is the character of the Bad Lands of Montana? 1254.
What curious geyser is in Deer Lodge Valley? 1254.
What makes the climate healthful? 1254.
How does Montana stand in the production of sheep and wool? 1255.
Where is the largest smelter in the world? 1255.
What is the peculiar shape of Idaho? 912.
What makes the scenery varied and grand? 912.
What is the law of the state regarding water supply? 913.
What immense lumber mill at Potlatch? 913.
How does the climate of Washington differ in the west and the east? 2045.
How many Federal forest reserves in the state? 2045.
Through what port does the bulk of Alaskan trade pass? 1715.
What makes the delightful climate of western Oregon? 1391.
For what fruits is Oregon famed? 1392.
Where are the hop farms of Oregon? 1391.
What port leads the world in lumber exports? 1392.
Why is the state of Wyoming not adapted for agriculture? 2115.
What splendid showing is made in wool production? 2115.
Where is Yellowstone Park? 2115.
How large is Yellowstone National Park? 2122.

THE SOUTHWESTERN STATES.

How many groups of mineral springs in the state of Colorado? 428.
How much land did Congress give to the public schools? 428.
How does the state rank in producing hard coal? 428.
What prehistoric remains are in the state? 429.
Where do the breeders of the north and the south meet? 521.
Where are the greatest natural bridges in the world? 1994.
What is the altitude of Utah? 1994.
What is the finest building in Salt Lake City? 1667.
Are there any fish in Great Salt Lake? 800.
How does Nevada compare with other states in population? 1323.
What is irrigation doing for the state? 1323.
What has given a new impetus to mining? 1323.
Where is the hottest and dryest region of our country? 308.
How does the climate of the state of California affect the soils? 308.
Where are the fruit and the gold regions? 309
Where are trees 325 feet high and 120 feet in circumference? 309.
How will the Panama Canal affect California? 310.
What is the Golden Gate? 1671.

TERRITORIAL POSSESSIONS.

How much of the United States territory is in Alaska? 37.
How long is the Yukon River? 37.
How does the Japanese current affect the climate? 37.
How much of the salmon product comes from Alaska? 38.
What was the later name of the Hawaiian Islands? 848.
How does the temperature vary? 848.
What important and valuable position has Hawaii? 848.
What splendid landlocked harbor in Hawaii? 1435.
How many islands in the Philippine group? 1470.
How is the climate in July and August? 1470.
What valuable service is rendered to agriculture by the government? 1470.
What is the chief product? 50.

CANADA.

What does Canada comprise? 316.
Is Canada as large as the United States? 316.
How does the population compare with Belgium's 316.
How many miles between Halifax and Vancouver? 316.
How many miles from Victoria to Dawson? 316.
What countries are in the latitude of its southerly portion? 316.
In what latitude is its most northerly portion? 316.
What does the older Canada comprise? 316.
What are the maritime provinces of Canada? 316.
Where are the eastern provinces? 316.
Where are the central provinces? 316.
What is the Pacific province? 316.
Where does the northern province lie? 316.
How do the summers and winters compare with those of Europe? 317.
How does the Japanese current affect the climate? 317.
Where are precious metals found in abundance? 317.
Where is the Laurentian Range of Hills? 317.
How is the lack of coal in this range replaced? 319.
What three rivers are among the largest in the world? 317.
What is one of the greatest sources of national wealth? 317.
How is the irregular triangle of prairie bounded? 317.
What is Canada destined to become? 317.
What trade has gained 90 per cent in ten years? 317.
What is the total of Canada's exports? 317.
Where is most Canadian wheat shipped to? 317.
How many wood-pulp mills are there in Canada? 317.
What are the chief mining provinces? 318.
What is the value of coal produced yearly? 318.
What makes smelting economical in Nova Scotia? 318.
Where are the only nickel producing localities in the world of any consequence? 318.
What mine contains enough nickel ore to supply the needs of the world for all time? 318.
How is copper produced in these mines? 318.
What mines supply the world with asbestos? 318.
Where are the greatest placer gold-mines in the world? 318.
Where is one of the richest silver camps in the world? 318.
What is the value of silver produced in 1908? 416.
How many miles of the Yukon river are navigable? 2127.
When was gold discovered in the Klondyke River? 2127.
What vegetables grow in Yukon? 2127.
Where is the fishing ground of North America? 318.
How many Canadian fishermen are employed? 318.
Where do the salmon impede the flow of the rivers? 318.
How many government hatcheries are there? 318.
What is the largest steel-arch railway-bridge in the world? 318.

Where will be the largest irrigation system on the American continent? 320.
How much do the settlers pay for irrigation water? 320.
What railway furnishes a highway round the world? 320.
Where is the Canadian Northern Railway? 320.
What will be the total mileage of the Grand Trunk Pacific Railway Co.? 320.
What is the greatest waterway in the world? 319.
When will Canada be the Granary of the Empire? 1160.
What province has no waste country? 39.
In what province is the mean temperature 62.7 degrees in summer and 6.9 degrees in winter? 1682.
Where is the watershed of the Pacific slope? 269.
What province is a vast sanitarium? 270.
Where is one of the best deep water harbors on the Pacific Coast? 2001.
What river in Canada is 2,400 miles long? 1137.
What Canadian province has no hotels? 1017.
Where is one of the chief centers of herring fishing? 1017.
What Canadian territory is named after Sir John Franklin? 708.
What city brings its electrical supply 80 miles? 319.
How much larger is Ontario than the United Kingdom? 1383.
What are the world scenic features of Ontario? 1383.
What are the five leading sources of wealth? 1383.
How do the Great Lakes affect the climate? 1383.
What peninsula is the finest part of Ontario? 1383.
What part is a vast fruit farm? 1384.
What province has no direct taxation for provincial purposes? 1363.
Where are one fifth of Canadian fish caught? 1324.
What is the garden province of Canada? 1547.
Where has an experimental farm been for 50 years? 1548.
How long was Newfoundland the only English colony in America? 1341.
What made England a nation of sailors? 1341.
By whom was Newfoundland colonized? 1341.
Why is it a good naval base? 1342.
Where is an immense game preserve? 1342.
How large is the catch of cod yearly? 1342.
How much is fit for agriculture? 1342.
Where is one of the most valuable iron mines in the world? 1342.
What is the chief center of salmon fishing? 1342.
What are the Banks of Newfoundland? 1342.
What is the nearest port in America to Europe? 1342.
Why are all school examination papers sent to England for marking? 1342.
How does Quebec compare in size with the British Isles? 1571.
Is Montreal nearer to Europe than New York? 1572.
When were the provinces of Alberta and Saskatchewan added to the Dominion? 320.
How are the Northwest Territories governed? 1360.
What do the Northwest Territories comprise? 1360.
How could the Mackenzie river be made the longest inland water-route in the world? 1137.
How is trade carried on in the Mackenzie District? 1138.
What is most interesting about the Keewatin District? 893, 995.
From what province will Canada get iron ore in the future? 1966.
How does the Labrador current benefit the fisheries? 1016.
Why is Quebec cut off from the Atlantic? 1571.
What per cent. of the population of Quebec are Catholics? 1572.
How many square miles of forest land in Quebec? 1572.
How long is Victoria bridge, Montreal? 266.
What beautiful cataract near the Dominion capital? 374.
What makes navigation of the Bay of Fundy dangerous? 724.

What is the most northerly of Canada's great lakes? 798.
What city on the Atlantic is strongly fortified? 827.
What is the largest river in Canada? 1137.
What cataract in Quebec is 250 feet high? 1257.
What portion of Newfoundland is covered by lakes and rivers? 1342.
What does the name Niagara signify? 1345.
What volume of water per minute passes over Niagara Falls? 1345.
What is the estimated amount of power at Niagara? 1346.
Why was Prince Edward Island called a "low and beautiful land"? 1547.
What is the total area of the Rocky Mountains? 1622.
What island is called "the sailor's grave"? 1651.
What is the nearest port in America to Europe? 1658.
Where are the headquarters of the consolidated Six Nations? 260.
How much money has Canada spent on canals? 319.
How high is the head of Lake Superior above the head of tidewater? 1659.
What are the total imports of Canada? Also exports? 317.
How long is the St. Clair tunnel? 1656.
Where is that natural wonder called the "reversible falls"? 1658.
What is the value of cheese exported? 317.
What is the value of the fish catch per year? 318.
How many miles of railway in operation in Canada? 318.
Where is irrigation employed extensively in Canada? 320.
What is the annual value of Canada's timber exports? 317.
How much nickel has been taken from the Sudbury mines? 318.
How much gold has been mined in Canada? 318.
What parts of Canada have supplied the most gold? 318.
What is Canada's coal area? 318.
How much land has Ontario left for settlement? 1383.
What city is at the head of ocean navigation? 1258.
Where is the famous Cobalt mining center located? 416.
How rapidly is Ontario being settled? 1384.
Where is the Agricultural College of Ontario? 810.

MEXICO AND CENTRAL AMERICA.

How large is Mexico? 1214.
What is the length of the coast line? 1214.
What is the one good harbor? 1214.
How high is the tableland of Mexico? 1214.
What peak is 17,540 feet high? 1214.
What is the largest river and lake of Mexico? 1214.
How many salt lakes in the valley of Mexico? 1214.
Where is the region of perpetual spring? 1214.
Where is an extensive field for the botanist? 1214.
What are the 353 species of birds famed for? 1214.
What regions have been exploited for 400 years? 1214.
Why has Mexico been called a "horn of plenty"? 1215.
What are the products of the lowlands? 1215.
Where are coffee and cereals grown? 1215.
How many crops of corn can be grown in a year? 1215.
What is the Department of Promotion? 1215.
What rank does Mexico hold in exporting hides and skins? 1215.
What interoceanic railway was opened in 1907? 1216.
What is the prevailing religion? 1216.
Are all religions tolerated? 1216.
What kind of government has Mexico? 1216.
What ancient people founded the City of Mexico? 1213.
What cathedral was a century in building? 1214.
What drains the valley of Mexico? 1214.
What are the boundaries of Central America? 60.
How does it differ from North and South America? 60.
What are the area and the population? 60.

What is the largest inland lake south of the Great Lakes? 60.
How much rain falls in Panama? 60.
What are the chief products? 60.
What ancient people made their home here? 60.
Which country is a British possession? 60.
Where is the republic of Panama? 1415.
When was the Panama Canal first talked of? 1415.
Why did Panama secede from Colombia? 141.

SOUTH AMERICA.

What are the length and width of South America? 61.
In what direction is it from North America? 61.
What important inlets on the coast? 61.
What mighty range of mountains on the western coast? 61.
What is the highest point on the western hemisphere? 61.
Why have the three vast river systems no parallel? 61.
What lake is over 12,000 feet above tidewater? 61.
How does the rainfall differ from that of North America? 61.
What is the character of the forests? 61.
What is said of the coffee, rubber and wheat of South America? 62.
Where are June, July and August the winter months? 239.
Where is the Amazon 60 miles wide? 57.
What river pours 52,000,000 cubic feet of water into the ocean every minute? 1501.
What is the length of the coast line? 426.
What is the only break in the western range of the Andes? 426.
How do the rivers mostly flow? 426.
What was the value of precious metals taken by Spain in three centuries? 426.
What are the principal exports? 426.
How long is the seaboard of Ecuador? 580.
Where does it rain nearly all the year round? 580.
What is the state religion? 580.
Who are the merchants and landholders? 580.
What place is famous for Panama hats? 580.
What country has a lake whose surface is covered with pitch? 122.
What is the character of the country of Venezuela? 2008.
What links the Orinoco and the Amazon? 2008.
What is the basis of Venezuela's wealth? 2009.
The Inca Indians form what part of the population of Peru? 1456.
How does the length of its coast compare with our Atlantic coast? 1456.
Where is the most elevated tableland in the world, next to that of Tibet? 1457.
How long does it take to travel from Lima to Iquitos? 1457.
How does Bolivia compare in size and population with Illinois and Chicago? 238.
What island was the home of the Incas? 238.
What hinders the development of the mines? 239.
Why is Chile called the shoestring republic? 386.
What is the third largest city in South America? 387.
What is the chief source of the nation's wealth? 387.
Why are the houses of Santiago only one story high? 1676.
The Argentine Republic is 22 times as big as what state? 94.
What is the second largest river system in the world? 94.
Where are the famous wheat fields? 94.
Why will it be one of the great producing nations of the world? 94.
How is Buenos Ayres connected with the U. S.? 285.
What is one of the most fertile regions of South America? 1419.
What is Paraguay tea? 1419.
What is the temperature during the summer months of December, January and February? 1419.
How does Uruguay compare with Rhode Island in size? 1992.

What is the character of the country? 1992.
Is Brazil as large as the United States? 261.
What is the most remarkable system of waterways on our planet? 261.
How does Brazil lead in variety of plants? 262.
What is the language spoken? 262.
Who pays the salaries of the Catholic prelates? 262.
What are the five sections of Guiana? 811.
How is British Guiana rich? 811.
Where are the inhabitants gradually diminishing? 811.
To what country do the Falkland islands belong? 648.
Who is called the king of the penguins? 648.
Why has Patagonia disappeared from the map? 1428.

EUROPE.

How does Europe rank in size compared with other continents? 632.
How does it rank as to density of population? 633.
How does Europe compare in size with the United States? 632.
How is Europe divided physically? 632.
What portion of the continent is classed as plains? 632.
In what country is the highest summit? 632.
What sea enters Europe from the Arctic Ocean? 632.
What seas enter from the Atlantic Ocean? 632.
How do the lakes in Europe compare in size with lakes in America and in Africa? 632.
Which is the largest river of Europe? 632.
What is the general climate of Europe? 633.
Does the Gulf Stream affect the climate of western Europe? 633.
What river of Europe contains a passage known as the Iron Gate? 502.
Do certain winds affect the climate of Europe? 633.
Is it probable that most of the fruits now grown in Europe are natives of the country? 633.
To what races of people do the Europeans belong? 633.
What is the prevailing religion in Europe? 633.
What race track in Europe is said to be the most famous one in the world? 622.
For what has the village of Interlaken, Switzerland, become famous? 932.
What is the largest roof in Europe unsupported by pillars? 1408.
What famous hunting grounds have recently been made one of the most beautiful pleasure grounds of Europe? 622.
Where are the finest squares in Europe? 1954.
What is the finest Egyptian museum in Europe? 1954.
What is the most aristocratic watering place in Europe? 335.
What substitute for coffee is used throughout Europe? 757.
What is the largest military post on the Mediterranean Sea? 1928.
What are the most celebrated tunnels in Europe? 1951.
What is the oldest university of central Europe? 1987.
What universities of Europe are on the German model? 1987.
In what country of Europe is education most widely spread? 756.
How many universities are there in Europe? 1987.
For what was the university of Bologna especially celebrated? 1987.
What is the only European nation not having compulsory military service? 108.
What are the most famous objects of grandeur and beauty in the Alps? 55.
What mountains are called the playground of Europe? 55.
What city government controls the opera-houses, theaters and street railways? 283.
Where is the highest inhabited spot in Europe? 634.
What is the third largest city of Europe? 204.
Which is the most thickly populated country in Europe? 195.
Where are found the largest coal-fields of Europe? 756, 1926.

What is Europe's average population to the square mile? 633.
Where is Pompeii? 1524.
Why did the Phœnicians give the name to Europe? 632.
What gives it such an extensive coast line? 632.
Where are the two mountain systems? 632.
What is the center of the mountain system in the south and west? 632.
What waters nearly surround Europe? 632.
What islands cluster around the mainland? 632.
What are the largest rivers. 632.
Where do the myrtle and the date-palm grow? 632.
Where did the plants of southern Europe come from? 633.
Name some of the wild animals of Europe? 633.
What is the best method of classifying the races? 633.
How many languages are spoken in Europe? 633.
What geographical changes were made in Europe in the last century? 635.
What is the longest river of Europe? 2028.
How is the Danube controlled? 503.
Where is the most difficult passage of the Danube? 502.
What is one of the most noted rivers in the world? 1606.
What sea has long been one of the commercial highways of the world? 1360.
What prevents the Mediterranean from evaporating away? 1198.
How many railroad tunnels pierce the Alps? 55.
Where is the Balkan peninsula? 161.

GREAT BRITAIN AND IRELAND.

What are the boundaries of Great Britain? 798.
What is the greatest length of the kingdom? 798.
Why is the geological formation of the country interesting? 798.
What is the greatest natural wealth of Great Britain? 798.
Why has Great Britain one of the healthiest climates in the world? 798.
How much of the world's shipping is done by British vessels? 798.
What countries compose the United Kingdom; what the British Empire? 799.
What are the shape and size of England? 615.
What makes its coast line so long? 615.
How does it compare in size with New York state? 615.
How much of its area is productive? 615.
What are the yearly exports and imports? 615.
When did agriculture represent half the wealth of the nation? 615.
What port has one-third of the foreign trade of the whole kingdom? 1103.
What is the area of London? 1110.
What makes London the wealthiest city in the world? 1111.
What is the North Channel, the Irish Sea and St. George's Channel? 937.
What are the provinces of Ireland? 937.
What is the size of Ireland? 937.
What advance has the country made in recent years? 937.
What makes Dublin one of the most beautiful capitals in Europe? 556.
What is the Cove of Cork now called? 1574.
How does Scotland compare with Indiana in size? 1707.
Why are few places more than 40 miles from the sea? 1707.
How long is the Clyde? 1708.
How many mountain peaks above 3,000 feet? 1708.
How do the cool summers affect agriculture? 1708.
What is said of salmon in Scotland? 1708.
What is the state religion? 1708.
What is the source of Glasgow's prosperity? 772.
Where is Fingal's Cave? 674.

FRANCE.

How does France compare in size with Europe? 703.
How long is its coast line? 703.
What are its boundaries? 703.
What is the length of its land frontier? 703.
What is the character of the southeastern half of France? 703.
What is the highest peak of the Cevennes Mountains? 703.
What other mountain ranges in France? 704.
What two widely different regions about the Cevennes Mountains? 703.
What mountains separate France from Spain? 704.
What famous tunnel leads into Italy? 704.
What are the largest rivers? 704.
What large island on the coast belongs to France? 704.
What proportion of the people live in the country? 705.
What is the high value of an acre of market-gardening ground? 705.
What industries show the artistic taste of the people? 705.
What rank does France hold in silk manufacture? 705.
How is internal commerce carried on? 705.
What university has 18,000 students attending? 706.

GERMAN EMPIRE.

What is the one imperial province of Germany? 756.
Where is the high tableland of Germany? 756.
What is the highest peak in Germany? 756.
What is the character of northern Germany? 756.
What are the drainage basins? 756.
How are the great river systems conected? 756.
Where is the largest iron deposit in Europe? 756.
Where is the largest coal-field in Europe? 756.
Where is one-half of the world's zinc produced? 756.
Name some other natural resources of Germany? 756.
What is used as a substitute for coffee? 757.
Where does the making of toys and wooden clocks flourish? 757.
How much beer is brewed yearly? 757.
What is the size of the German mercantile fleet? 757.
How long must a German serve in the army? 757.
Why are Germans called Dutchmen? 757.
What is the density of population in Germany? 757.
What are the largest cities of Germany? 757.
What are the German colonies? 757.
Where is the street called Unter den Linden? 204.
What are the most beautiful gates of Munich? 1277.

AUSTRIA-HUNGARY.

How does it compare in size with Texas? 144.
What is the meaning of the name? 145.
What mountains in Austria-Hungary? 145.
How does the climate vary throughout the country? 145.
What is the only mineral not found in this country? 145
Where are the richest lead-mines in Europe? 145.
What mines were worked by the Celts and Romans? 145.
How many people engage in tilling the soil? 145.
Where is the granary of Europe? 145.
For what animals is Hungary famous? 145.
In what products does Austria lead? 145.
What city leads Europe as a milling center? 145.
How many grades of wheat are used? 145.
Where are half the glass factories? 145.
What does America buy and sell from Austria Hungary? 145.
How long is the Danube's course? 145.
What is the size of the merchant-marine? 145.
How is most of the ocean freight transported? 146.

SPAIN AND PORTUGAL.

What waters wash the coast of Spain? 1788.
How is it separated from Africa and France? 1788.
What islands on the coast belong to Spain? 1788.
What is the area of Spain? 1788.
How many rivers are there in Spain? 1788.
Where are the richest quicksilver mines in Europe? 1788.
What per cent. of the people are engaged in farming? 1788.
What is the character of the Mediterranean shore? 1788.
What is one of the principal exports? 1788.
What are the chief cities of Spain? 1788.
What are the length and breadth of Portugal? 1534.
What is the total area with the Azores and Madeiras? 1534.
How far are the Azores from Portugal? 149.
For what has the island of Madeira long been noted? 1141.
How does the population of Portugal increase? 1534.
What is the most important mountain range in Portugal? 1534.
What do the ocean breezes do for the climate? 1534.
What is the condition of agriculture? 1534.
What is port wine? 1534.
Where are the manufactures located? 1534.
What are the chief mineral products? 1534.
How long must each male Portuguese serve in the army? 1534.
Where is one of the oldest universities in Europe? 1534.
Where was one of the greatest earthquakes on record? 1079.
What city in Portugal has a crystal palace? 1387.

ITALY.

How are the limits of Italy strongly defined? 946.
What is the shape of the peninsula? 946.
What is the character of northern Italy? 946.
What are the great plains of Italy? 947.
What mountain systems in Italy? 947.
What are the most remarkable volcanoes? 947.
Are the Italian rivers navigable? 947.
What are the famous mountain lakes? 947.
What noted marble comes from Italy? 947.
What is the character of the people? 947.
How many of the people are engaged in agriculture? 947.
What are the main products? 947.
What is the state religion? 947.
How does the navy of Italy rank? 947.
Why must Rome import all the necessities of life? 1630.
What famous plant that once grew in Egypt now grows in Sicily? 1418.

RUSSIA.

How large is the Russian Empire compared with the continent of Europe? 1645.
European Russia is what part of the whole empire and contains what portion of the population? 1645.
What ocean was the whole sea coast of Russia till the end of the seventeenth century? 1645.
What sea coast is now of chief importance to Russia? 1645.
What is the principal range of mountains? 1645.
What large rivers flow north, and which flow south? 1645-6.
How wide is the plain crossing central Russia? 1645.
What two great rivers have been connected by a canal? 1646.
What are the four chief cities of Russia? 1646.
What races of people make up the population of Russia? 1646.
What kind of a government has Russia? 1647.
To how many boards is the administration of the empire intrusted, and what power has each board? 1647.
The peasant class are what portion of the population? 1646.
What minerals are found in Russia? 1646.

What are the chief articles of export? 1646.
What is a great help to the inland trade? 1646.
What is the monetary value of manufactured products? 1646.
What part of Siberia is very fertile and is the granary of the country? 1750.
When was the trans-Siberian railroad opened? 1750.
What is the climate of Siberia? 1750.
How many degrees below zero has the thermometer been known to register? 1750.
What town is called the Manchester of Poland? 1107.
In what two continents does the Russian empire lie? 1645.
What are the main divisions of Russia? 1645.
What part of the land surface of the globe is Russia? 1645.
What is the present seaboard of Russia? 1645.
Where is one of the finest roadsteads in the world? 1645.
Where are the chief Russian seaports? 1645.
What does the Caspian sea furnish to Russia? 1645.
What immense plain crosses European Russia? 1645.
What rivers rise in this plain? 1645.
What is the population of Russia? 1646.
What are the five classes of the Russian people? 1646.
What makes the wide diversity of climate? 1646.
Where are the minerals found in Russia? 1646.
How much of the land belongs to the peasants? 1646.
How many miles of canalized rivers? 1646.
What is the war-footing of the army? 1647.
What was the extent of the former kingdom of Poland? 1512.
What is the meaning of the word Finland? 674.
What canal runs through granite rock in Finland? 675.
Why is Caucasus called the mountain of languages? 353.
What separates the Russian and English possessions in Asia? 1955.
What is the coldest country in the world? 1749.
What are the tundras of Siberia? 1750.
How was the barrier of Lake Baikal overcome in building the Siberian railroad? 1751.
What is the chief naval station of Russia in Siberia? 2026.

SCANDINAVIA.

What countries belong to Denmark? 520.
What are the boundaries of Denmark? 520.
How does the skai damage the crops? 520.
What is the commonest tree in Denmnark? 520.
What is the value of the fisheries? 520.
How much good soil in Denmark, and how many farmers are there? 520.
Are the Danes well-educated? 520.
To what church must the king belong? 520.
What separates Norway from Sweden? 1361.
Who are the only inhabitants of the mountains? 1361.
How does the Gulf Stream affect the climate? 1361.
What is the main occupation of the people? 1361.
What is the condition of the mineral wealth? 1361.
What interesting establishment in Christiania? 395.
What are the length and width of Sweden? 1854.
Where are the timber-lands and good pasturage of Sweden? 1854.
Where are the iron-mines and copper works located? 1854.
How much of the surface do the lakes cover? 1854.
How long between summer and winter? 1854.
To what extent is grain raised? 1854.
How much of the land is covered by forests? 1854.
How do the soldiers pay for their support? 1854.
What is the national religion of Sweden? 1854.

GREECE.

What is the geographical location of Greece? 800.
How are its provinces divided? 800.
What is the area of Greece? 801.
What mountains on the north separate it from the rest of Europe? 800.
Name some of the islands which are formed by an extension of the mountains forming the northern boundary? 800.
What can you say of the rivers, their size and direction? 800.
To what race of people do the Greeks belong? 801.
What are thought to have been the habits of the early Greek tribes? 801.
From what direction is it thought that the early tribes entered Greece? 801.
By what name did those early tribes call themselves? 801.
By what name does Homer speak of the early tribes? 801.
To what language is that of the Greeks closely allied? 801.
What is the earliest account we have of the Greeks' religion? 801.
What was the form of their worship? 801.
What is the modern Greek church called? 801.
How is the Greek church supported? 801.

TURKEY.

What countries are comprised in the Ottoman Empire? 1955.
What are the total area and population of these countries? 1955.
What races make up the Turkish subjects? 1955.
What are the largest salt lakes? 1956.
What are the principal mountain ranges? 1956.
What is the climate of the country? 1956.
What flower is extensively cultivated? 1956.
Are the resources of the country well-developed? 1956.
What is the religion and law of Turkey? 1956.
How is the sultan regarded, and how great is his power? 1956.
To what extent is polygamy practiced? 1956.
What attitude does the government take toward education? 1956.
Who is the grand vizier? 1956.
Who is the Sheik-ul-Islam? 1956.
Who is the present sultan? 1956.
How many sultans have there been since the conquest of Constantinople? 1956.
Of whom are military services required? 1956.

HOLLAND.

Where is Holland situated? 878.
Is Holland above or below the level of the sea? 878.
For what double purpose are the canals used? 878.
What double purpose is served by the dikes? 878.
What are the chief agricultural industries? 879.
What are its chief manufactures? 879.
What has lately become an important item of manufacture? 879.
In what has Amsterdam the largest trade in the world? 879.
What city is the capital of Holland? 879.
What island possessions has Holland in the East Indies? 879.
In the West Indies? 879.
What are the three largest cities in Holland, not including The Hague? 879.
Who is the present ruler of Holland? 879.
What is Holland's busiest port? 1637.

SWITZERLAND.

Locate Switzerland. 1857.
What is said of the surface of Switzerland? 1857.
Which are the principal mountain chains, and what may be said of them? 1857.

Give the location and area of the plain of Switzerland. 1857.
What hill country lies to the east of this tableland and between what waters? 1857.
What are the main divisions of northern Switzerland? 1857.
Into what is the Alpine region divided? 1857.
By what rivers are the valleys of Switzerland drained? 1857.
By what are the higher mountains covered? 1857.
What is said of the glaciers? 1857.
Where is the lowest part of Switzerland? 1857.
What is said of the forests of Switzerland? 1857.
How are the trees, cut on the heights, conveyed to the valleys below? 1857.
What is the chief business of the people of Switzerland? 1857.
In what part of Switzerland is farming carried on? 1857.
Where are the manufactures chiefly carried on? 1857.
What is said of trade in Switzerland in proportion to population as compared with that of other European countries? 1857.
What are the chief imports? 1857. Exports? 1857.
How is Switzerland governed? 1857.
What is said of the Federal legislature of Switzerland? 1857.
By whom is the president of the republic elected? 1857.
By whom is most of the land owned? 1857.
What are the military requirements of Switzerland? 1857.
What languages are spoken in Switzerland? 1857.
What cities are the centers of the Protestant part of Switzerland? 1857.
What is the population of Switzerland? 1858.
Where does Catholicism prevail? 1857.
What are the educational requirements of Switzerland? 1857.
What is said of the higher and specialized schools? 1857.
What is said of the postoffices, railroads etc. of Switzerland? 1858.
Under whose control are they? 1858.
Name the chief towns of Switzerland. 1858.

ASIA.

How does the continent of Asia rank in size? 119.
What does the name mean? 119.
What portion of the land area of the world is in Asia? 119.
Which is the greatest mountain system of Asia? 119.
What portion of Asia's area is in its peninsulas? 119.
What three large peninsulas are in southern Asia? 119.
What sea bordering Asia on the southwest has become a highway of the first importance? 119.
What two great tablelands has Asia, and what is their location? 119.
What three inland bodies of water has Asia? 119.
What are the names of several of the larger rivers of Asia? 119.
What is the location of the islands relative to the southeastern coast? 119.
What are the chief productions of Asia? 119.
To how many different groups do the people of Asia belong? 119.
What important junction does Allahabad form? 51.
What city is surrounded by a mud wall 24 feet high? 237.

INDIA.

What five natural divisions has India? 918.
What large river systems has India? 918.
How many well-marked seasons has India, and what are they? 918.
Of the domesticated animals what ones do the work of agriculture? 918.
What domestic animals are held sacred? 918.
Of the wild beasts, which one is the most feared? 919.
What are the chief agricultural crops? 919.
What portion of the country is available for farming? 919.

What European country has the greatest trade with India? 919.
Politically, India is a dependency of what nation? 919.
For purposes of administration, India is divided into how many great divisions? 919.
What is the occupation of two-thirds of the people? 919.
To what religion do most of the people belong? 919.
How early were modern missions established? 919.
What city of India is entered by metaled roads through thirteen gates? 1021-2.
What famous palace has made Delhi, India, noted? 517.
Why do the Hindoos refuse to kill the cobra? 417.

JAPAN.

What is the wealth of Japan, and what is the national debt? 964.
How much of Japan's trade is carried on with the United States? 964.
What has made navigation safe? 964.
What is the mileage of the railways? 964.
How do the chief cities compare with Chicago, Milwaukee, San Francisco and New Orleans? 964.
What is said of cloisonne? 965.
Which industries are increasing, and which are decreasing? 965.
What country is under the protection of Japan? 1157.
What naturally impregnable naval station now belongs to Japan? 1529.

CHINESE EMPIRE.

By what name do the natives call their kingdom? 389.
What provinces or divisions has the empire? 389.
What emperor, B. C., formed China from eight kingdoms into one great empire? 384.
What is the most extensive mountain range, and of what great mountain system is it a spur? 389.
How does this mountain range divide China? 389.
What is that portion of China between this range of mountains and the Great Wall called? 389.
Describe the earth covering most of this great plain. 389.
What part of China is called the granary of the nation? 389.
What two rivers are the largest in China? 389.
What name is given the river Ho because of its many floods? 389.
What canal joins the northern and southern parts of the empire, and when was it built? 389.
How long is the Great Wall? 389.
How does the emperor open the farming season, and how does the queen start the work among the silkworms? 390.
How long has the silkworm been cared for in China? 390.
What articles are used as food, not common in European countries? 390.
What is the great beverage? 390.
What are the best buildings seen? 390.
Has China's mineral wealth been developed? 390.
What manufactured article is superior to any made in the west? 390.
What two articles are the chief ones of export? 390.

AUSTRALIA.

To what European power does Australia belong? 142.
What is the size of Australia? 142.
What ranges of mountains are found in Australia? 142.
What river is the only large one in Australia? 142.
What is the nature of a large part of the interior? 142.
Where is the lake district, and what are the four largest lakes? 142.
What is the general climate of Australia? 142.
Do the native people differ from those of other continents? 142.
What is the chief occupation of the natives? 142.
What is their sense of right and wrong? 142.
How many political divisions has Australia? 143.

What new form of government went into effect the first day of this century? 143.
What portion of the people are agriculturists? 143.
What are some of the exports? 144.
What city is the largest in Australia? 143.
What city has a first class naval station? 144.
Why was the Australian ballot system invented? 144.

AFRICA.

What are the greatest length and the greatest width of this continent? 22.
How is it joined to Asia on the northeast and separated from Europe on the northwest? 22.
What seas surround Africa? 22.
What is the northern end of the continent? 22.
What mountains run parallel to the Mediterranean coast? 22.
What have recent explorations determined about the Sahara desert? 22.
What region south of the Sahara? 22.
How is the southern end of the continent marked? 22.
What are the great rivers of Africa? 23.
What is the drainage area of the Nile? 23.
Where are the great lakes of Africa found? 23.
What is said of the climate of Africa? 23.
What is the most fatal region for Europeans and Americans? 23.
Where are the minerals found? 23.
What animal has, it is said, never been domesticated? 23.
Have they ever been domesticated? 604.
What fly's bit is fatal to cattle? 23.
Where are the Hottentots and the pygmies? 23.
What states of Africa are more or less independent? 23.
What nations have colonies in Africa? 24.
What is the total area of the British colonies? 328.
What is the principal harbor of Cape Colony? 328.
What forms the watershed of the country? 328.
How does the eastern part differ from the western part? 328.
Why has the Cape long been known as a health resort? 328.
Describe the immense reservoir that is used for irrigation. 328.
What did the natives formerly use instead of tobacco? 328.
What has become of the native animals? 328.
What birds are found here? 328.
How large is the Kimberly diamond mine? 329.
What are the principal exports and imports? 329.
How many miles of good roads and railroads in Cape Colony? 329.
What are the chief towns? 329.
What modern improvements in Cape Town? 330.
How does the Transvaal compare with Arizona in size? 1937.
What does the land of the Transvaal mainly consist of? 1937.
What makes the climate dry? 1937.
What is the character of the soil? 1937.
What industry is supreme? 1938.
What is the Orange River Colony? 1389.
What is the occupation of the Basutos? 180.
What are the pròducts and imports of Natal? 1305.
Where has asbestos been discovered? 2137.
What is the Central Africa Protectorate? 24.
Why was it founded? 1366.
What are the five provinces of Uganda? 1964.
What is killing off the people of Uganda? 1964.
How many miles of postroads and railroads in Rhodesia? 1607.
What are the products of Nigeria? 1349.
What town has a fine and safe harbor? 1021.
What three countries own Somaliland? 1780.

What country with 32 miles of coast extends inward 335 miles? 1920.
What is the second longest river in the world? 1351.
What lake forms the reservoir for the Congo River? 442.
What country controls the trade of the Niger River? 1349.
How much of the Zambezi River is navigable? 2129.
Is Lake Victoria considered the source of the Nile? 2020.
What is the Assuan Dam? 125.

EGYPT.

How far up the Nile does Egypt extend? 590.
What is the main feature of the country? 590.
What part of the country is called lower Egypt? 590.
Into how many divisions is Egypt divided? 590.
What peculiarity has the Nile valley with reference to rain? 590.
At what season of the year does the Nile begin to rise? 590.
How is the course of the river broken? 590.
What are the chief agricultural crops of Egypt? 590.
What fruits are found in Egypt? 590.
What religion prevails in Egypt? 590.
What three gods were found all over ancient Egypt? 590.
For what purpose were the pyramids used? 591.

GEOLOGY

Who was the father of American geology? 1139.
With what does the science of geology deal? 747.
Why is the idea that geology deals with rocks only, inadequate? 747.
In working out the history of the earth, what has been the line of approach? 747.
How is the land carried away into the sea? 747.
How are sandstone and shale then formed? 747.
What is inferred from this? 747.
From what other sources do geologists learn to interpret rock formations? 747.
Where do geology and astronomy meet? 747.
What is the rival to the nebular hypothesis? 747.
What does it affirm? 747.
What are the three great classes of rocks? 747.
What are the three great agents in the metamorphism of rocks? 748.
What does dynamic geology deal with? 748.
What does petrography deal with? 748.
How may structural geology be defined? 748.
What does physiographic geology deal with? 748.
With what other divisions of the subject is it connected? 748.
What is dealt with in paleontologic geology? 748.
Why is historic geology a broad phase of the subject? 748.
Why is economic geology a practical phase of the subject? 748.
What are the five eras of geologic time? 748.
What was formed during the Archean era? 748.
What formations were deposited during the Proterozoic era? 748.
How long is this era supposed to have been? 748.
What systems of rocks were deposited during the Paleozoic era? 748.
How are these systems distinguished from one another? 749.
How great was the range of life in the Cambrian period as compared with that of the present? 749.
In what period have fish remains been found? 749.
What period is known as the Age of Fishes? 749.
During what period were the great coal deposits made? 749.
When did reptilian life begin? 749.
How is it known that the relations of sea and land differed at different times? 749.
Does it appear that the deep sea bottom has ever been land? 749.
What life existed in the Mesozoic era? 749.
In what period of this era were reptiles the dominant type of life? 749.

What period do mammals date from? 749.
In what period do remains of birds appear? 749.
When were the chalk deposits made? 749.
When did modern types of plants and fishes appear? 749.
What is the Cenozoic era? 750.
Why was the Pleistocene period remarkable? 750.
Where were the ice sheets developed? 750.
What various conjectures have been made concerning the age of the earth? 750.
How are the ages of the various eras thought to compare? 750.
What has been the character of the climatic changes? 750.
What may be said as to volcanic activity? 750.

PALEONTOLOGY.

What does paleontology deal with? 1409.
What are the three divisions of the science? 1409.
Do all the systems of rocks contain fossils? 1409.
What is it the province of paleontology to determine? 1409.
What is involved in the first point? 1409.
What is meant by cosmopolitan faunas and colonial faunas? 1410.
What is involved in the second point? 1410.
What does the third point consider? 1410.
What would a complete knowledge of paleontology involve? 1410.
How does paleontology aid in determining the age of rock formations? 1410.
What is paleontologic geology? 1410.
What is paleontologic zoology? 1410.
What is paleontologic botany? 1410.
Are all animals and plants of higher types than their ancestors? 1410.
Is evolution ascent or differentiation? 1410.
What is differentiation? 1410.
Does the succession of fossils demonstrate the doctrine of evolution? 1410.
Why is present knowledge of ancient life very far from complete?1410.

HISTORY

EGYPT.

What was the condition of the Egyptians when they first became known in history? 591.
What system of writing had they? 591.
Why is the early history dated by dynasties? 591.
Who founded the city of Memphis? 591.
What marks the site of the ancient city today? 1202.
What was the duration of the first dynasty? 591.
Who built the pyramids of Ghizeh? 591.
How many pyramids are there in Egypt? 1565.
How large is the Sphinx? 1797.
When did the shepherd-kings arise? 591.
What famous Hebrew of Scripture was prime minister to one of these kings? 591.
What is the capital of these kings called in the Bible? 906.
How did the kings of Egypt get the name of Pharaohs? 1464.
What are the most famous ruins in Egypt? 1898.
Who raised Egypt to its highest point of glory? 591.
What inscription did Rameses I have over his library door? 1063.
Under what king did the Israelites depart out of Egypt? 1585.
In what dynasty did Egypt come into touch with Greece and Judea? 591.
Who planned the Suez Canal and conquered Palestine? 591.
How was Moses reared? 1269.
When was Egypt conquered by the Persians? 591.
How did Cambyses die? 313.

What was the condition of agriculture among the ancient Egyptians? 26.
What system of writing had they? 591.
What American people used the same kind of writing? 873.
What sciences did the Egyptians know? 591.
What is the proof of their engineering skill? 591.
What mechanical tools were invented and used? 591.
How was papyrus made? 1418.
What did it cost to embalm a body in ancient Egypt? 1277.
Why did the Egyptians embalm their dead? 591.
What were pyramids, obelisks and sphinxes used for? 591.
What are "Cleopatra's Needles"? 1368.
What animal was especially sacred among the Egyptians? 591.
How was the key to their hieroglyphics first obtained? 1635.
How did their artists always represent the king? 668.
When was Alexandria founded? 591.
How did Sostrates deceive the king who built the famous lighthouse? 45.
What was the largest collection of books ever gathered before the invention of printing? 46.
What battle marked the end of Cleopatra's reign? 591.
Who placed Cleopatra on her throne? 408.
When and by whom was Cairo founded? 591.
How far are the pyramids from Cairo? 304.
Who were the Mameluke kings? 1154.
Who introduced the beginnings of European civilization? 592.
Under what ruler was the Suez Canal cut? 592.
What ruler suppressed the slavetrade? 592.
Since when has England had a controlling influence in Egypt? 592.
What was the unfortunate end of the brave Gen. Gordon? 592.
What valorous general has reconquered Sudan? 592.
When was Sudan declared open for general traffic? 1843.

BABYLONIA.

What made Babylon the most fertile spot in Asia? 152.
What did the Babylonians know of irrigation? 940.
How have we gained our knowledge of ancient Babylon? 152.
When did boys become free citizens? 152.
What privileges did women enjoy? 152.
How far back does Babylonian history go? 152.
When did Babylon become the capital of the empire? 152.
Who was one of the greatest of ancient monarchs? 1315.
What people did he carry into captivity? 153.
Why did the people revolt against Nabunaid? 153.
When and by whom was Babylon captured? 153.
How has Babylon been successively ruled? 153.
How was the city of Babylon built? 152.
What is the finest work in Babylonian literature? 1080.

ASSYRIA.

How did we learn the history of Assyria? 1352.
What description does Jonah give of the city of Nineveh? 1352.
Who was the real founder of the first Assyrian Empire? 125.
When did the empire decay? 125.
What king again established the power of Assyria? 125.
Who usurped the throne and what tax did he levy? 126.
Who carried away 27,000 of the best citizens of Samaria? 126.
Who was Assyria's greatest king? 126.
How is Sennacherib mentioned in the Bible? 126.
When did the kingdom reach its greatest height? 126.
What present town is near the ruins of Nineveh? 126.
From what place have many Babylonian records been shipped? 126.

What was the development of art in Assyria, Babylonia and Chaldea? 668.
Why were Assyrian boys educated at home? 1081.

THE HEBREWS.

How long have the Hebrews been called Jews? 971.
Where did the Hebrews first settle? 971.
How long did they remain in Egypt? 971.
When did Moses lead them out of Egypt? 971.
Under what leader did they enter the land of promise? 971.
How was the tribe of Levi provided for? 971.
What is the heroic age of Hebrew history? 972.
Who were the greatest of the 15 judges? 972.
Who were the greatest Hebrew kings? 972.
Who founded the lyric poetry of the Hebrews? 507.
What madness seized Saul? 1683.
Why was Solomon's reign a splendid failure? 972.
Who were the Samaritans? 972.
How long did the exile of the Jews last? 972.
What heroic family drove out the Syrians? 972.
What Roman captured Jerusalem? 972.
When did the Jews get the rights of Roman citizens? 972.
When was the temple at Jerusalem destroyed? 972.
What has been the history of the Jews since their dispersion? 973.
How are the Jews now distributed throughout the world? 973.
Who is placed next to Moses in Jewish literature? 1081.
Name some noted Jews in literature, science and public life? 1082.
How did the Jews divide the Scriptures? 209.
What saved the life of Josephus the Jewish historian? 979.

THE PHŒNICIANS.

What was the extent of Phœnicia? 1473.
Where did the Phœnician settlers come from? 1722.
When did Sidon begin to take the lead? 1473.
Under what people did Sidon reach its greatest prosperity? 1753.
What did Hiram, king of Tyre, furnish to Solomon? 1963.
What colonies were founded by the Phœnicians? 342, 1473.
What is the origin of the English alphabet? 1722.
What were the two chief manufactures of Phœnicia? 773, 1473.
What did the Phœnicians know of mining and working metals? 1473.
What is the last period of Phœnician history? 1473.
What was the religion of the Phœnicians? 1473.
When did the last shadow of Phoenician independence pass away? 1473.

GREECE.

From what people did the ancient Greeks come? 801.
What were their character and occupation? 801.
How did they enter Greece? 801.
What did each succeeding tribe do to the ones that went before them? 801.
When did the Greeks found cities in Sicily? 1751.
What was the early form of government in Syracuse? 1861.
Where is Sparta located? 1792.
How were the citizens classed? 1792.
What did Lycurgus do for Sparta? 1792.
In whose honor was Athens named? 130.
How is Draco unjustly blamed? 548.
What did Solon make the title to citizenship? 1779.
What was Solon's purpose in doing this? 1779.
What was the ceremony of giving an oracle? 518.
Where were the Pythian games held? 1568.
When were the Olympic games abolished? 1381.
What Persian king made the first two wars against Greece? 504.

What was one of the decisive battles of the world? 1167.
What Persian king made the third expedition against Greece? 2118.
Who was one of the ten generals chosen to resist the Persian invasion of Attica? 1228.
How many men escaped from the battle of Thermopylæ? 1901.
Who led the fight at the pass? 1056.
How did Themistocles win the battle of Salamis? 1664.
What rival helped him to win this battle? 97.
What other contest took place on the same day? 343.
Why was Themistocles banished? 1899.
Where was Mardonius, the Persian, defeated? 1502.
When was the most brilliant epoch of Athens? 130.
What made the age of Pericles glorious? 130.
What was the dying statement of Pericles? 1453.
What caused the Pelopponnesian War? 1453.
What people incited this war? 455.
When was the Confederacy of Delos formed? 518.
What is the earliest Greek literature we have? 1082.
What closes classical Greek literature? 1082.
What work of art illustrates a thousand years of Grecian history? 669.
What ruined the Parthenon? 1426.
Who built the Propylæa? 1465.
Where and when was Herodotus born? 868.
How did Socrates teach? 1777.
Why did he marry Xantippe the famous scold? 1777.
Why did Plato abandon poetry? 1502.
What are the important works of Aristotle? 97.
How did the drama arise in Greece? 550.
What are the seven tragedies of Æschylus? 21.
Who won the prize long held by Æschylus? 1781.
What happened in Athens when Euripides died? 632.
What heroic resistance did Platæa make to Sparta? 1501.
Who was the first king of Macedon? 1135.
Who was the father of Alexander the Great? 1135.
At what age did Alexander take charge of his father's government? 44.
What did Demosthenes do to stop the Macedonian conquest? 1899.
How did Alexander avenge himself upon the citizens of Thebes? 1899.
In what great battle did he defeat the Persians? 44.
What were the conditions of surrender made by Alexander to Darius? 44.
What disaster to Persia followed the battle of Arbela? 44.
Who did Alexander say should inherit his throne? 44.
When did the magnificent city of Persepolis disappear from history? 1455.
In what year did Greece become a Roman province? 1135.
What horde of barbarians ravaged Greece in 395 A.D.? 801.
Who defeated the Bulgarians? 801.
When did Greece pass into the hands of the Turks? 801.
When did the war of independence break out in Greece? 801.
What famous English poet fought with the Greeks in this war? 298.
Who was elected king of the Hellenes in 1863? 801.
Are the modern inhabitants of Greece descended from the ancient Greeks? 801.

ROME.

Wht is the legendary history of Romulus? 1631.
What peoples were mingled to form the ancient Romans? 1626.
What is the most rational view regarding the founding of Rome? 1626.
What crime led to the founding of the republic? 1872.
How have we learned the history of the Etruscans? 630.
Who made Rome the acknowledged head of Latium? 1872.

How did the Romans get Sabine wives? 1651.
What final victory placed Rome in control of all Italy? 1627.
When was Etruria admitted finally to the Roman empire? 630.
What were the Punic wars and when did each break out? 1562.
What did Rome gain by the first Punic war? 343.
How many years did Hamilcar defy Rome? 830.
What famous Carthaginian general fought during the second Punic war? 834.
What terrible punishment was visited upon Carthage at the end of the third Punic war? 1707.
What was the last battle Rome had with a civilized people? 1627.
Who was Jugurtha (1365), and what general finished the war with him? 1172.
In what city was the insurrection of slaves organized? 331.
What famous slave raised an army of 100,000 men to fight Rome? 1792.
What ended the servile war? 1525.
How did the plebeians wrest the tribuneship from the patricians? 1941.
Who let loose 4,000 slaves to kill the aristocrats of Rome? 1172.
How did Sulla get rid of his enemies? 1845.
What was the proud boast of Cornelia, the Roman matron? 789.
At what famous battle was Pompey entirely overthrown? 303.
How did Cæsar feel over Pompey's death? 1525.
From what city did he send his famous message: "I came, I saw, I conquered"? 2031.
Where does the modern title of Emperor come from? 303
What month was named in honor of Cæsar? 303.
What celebrated battle made Augustus master of the Roman world? 138.
Why did the beautiful queen Cleopatra commit suicide? 409.
What was the extent of the Roman empire at the death of Augustus? 1627.
Who was the first emperor to lead the Roman legions in person? 1934.
What emperor made a tour of the empire on foot to learn the needs of the provinces? 822.
Who was the saintliest of pagans? 139.
What new form of government did Diocletian give Rome? 533.
How did the cross come to be the standard of the Roman soldiers? 447.
Does Constantine's system of government exist anywhere today? 447.
With what power did he endow Christianity? 447.
What great general overthrew the Vandals? 2002.
What was the end of the Roman empire? 1627.

EUROPE.

What name is given to all ancient German races? 1895.
What barbaric women killed themselves and their children at the battle of Verona? 399.
Who were the Ostrogoths and the Visigoths? 784.
What misfortune befell Rome by the putting to death of Stilicho? 37.
What saved Europe from the Huns? 785.
What were the character and manner of living of the Huns? 899.
What remarkable meeting took place between Pope Leo and Attila? 899.
How were the Goths converted to Christianity? 785.
What is the value of Gothic in the study of Teutonic languages? 785.
What important part in history is played by the monks of the middle ages? 1250.
What was then the most important body of monks? 1250.
What work was done by the Benedictine monks for literature? 1063.
How did King Clovis become a Christian? 413.
What monks brought Christianity into England? 616.
What pope established our present calendar? 307.
What English priest became the Apostle of Germany? 242.

What religious order produced some of the greatest preachers and teachers of the middle ages? 543.
What was the famous contest of investiture between Hildebrand and Henry IV? 804, 326, 812.
What pope established Ash Wednesday observance? 119.
To whom is the Catholic Church indebted for her ritual and chants? 804.
Who first made the pope a temporal sovereign? 1450.
When was the temporal power of the pope formally established? 1054.
What were the ecumenical councils? 396.
Who were the Black Friars of England? 543.
Who Christianized the Saxon people? 368.
What emperor set up schools throughout his country in the ninth century? 368.
What people harassed England during the time of Alfred the Great? 48, 616.
When did the Northmen first attack England? 1359.
Who was the most illustrious of the Normans? 1360.
Who was absolute owner of all the land under the feudal system? 658.
How were the kings of Europe supported under the feudal system? 1875.
Under whose dominion was the Holy Roman Empire? 634.
Over what provinces did Henry II of Anjou reign? 634.
Where were the Hungarians located? 634.
How was half the population of Europe destroyed in 1348? 1499.
Whose reign was known as the golden age of Portugal? 610.
When did Portugal rank as one of the greatest monarchies of Europe? 1534.
At the beginning of the sixteenth century what was the extent of the empire ruled by Charles V? 634.
Who delivered Holland from the Spanish yoke? 879.
When did the Thirty Years' War occur? 634.
In what century was Sweden a great power? 634.
When did Russia begin to make a steady growth? 634.
At what time was Poland one of the most powerful states in Europe? 634.
When did the duchy of Prussia become independent of Poland? 634.
When did Russia begin to make a steady growth? 634.
When did the French Revolution occur, and how did it affect the map of Europe? 634.
After the fall of Napoleon's empire, how were the portions of Europe governed which now comprise Italy, Holland, Belgium, Germany and France? 634.
What are the chief changes in Europe since the middle of the nineteenth century? 635.
The early history of Europe is that of what three great empires? 633.
What barbaric people were next to the Western Empire? 634.
What people were next to the Eastern Empire? 634.
How were the German barbarians divided? 634.
Where was the home of the Slavs? 634.
Where were the Gothic tribes found? 634.
What people entered Britain when abandoned by the Roman garrisons? 634.
What became the starting point of the kingdoms of France and of Germany? 634.
What great empire began near the close of the eighth century? 634.
What important victory had much to do in keeping Europe from becoming a Mohammedan country? 371.
When did the Mohammedans establish themselves in Spain? 634.
In what century was the Holy Roman Empire established? 634.

Who was the first Roman to sail around England, proving it to be an island? 26.
Almost every country of Europe was brought under the power of which pope? 927.
Where is Thermopylæ Pass, and what made it famous? 1901.
What was the Augustan age? 137.
To what power does Iceland belong? 911.
For what is the Dardanelles celebrated in ancient history? 503.
What territory does the Ottoman Empire comprise? 1955.
When did Servia first lose her independence, and when last gain it? 1726.
What queen conquered Sweden, Lapland and Finland, and was afterwards called the Semiramis of the North? 1170.
What victory of the eighteenth century prevented the invasion of England by the French? 1663.
Who were the Turanians? 1952.
What Albanian chief with fifteen thousand men defied the Sultan, who had an army of one hundred and fifty thousand? 1687.
What caused Napoleon's defeat at Waterloo? 1301.
What empire was much reduced in territory by the Treaty of Berlin? 205.
What battle prevented the inferior nations of the East from destroying the civilization of the West? 135.
When and where was the last battle fought by the Goths? 785.
How long did the age of chivalry last? 1008.
What was the condition of knighthood under the feudal system? 1007.
What was the badge and what was the war-cry of the Crusaders? 483.
What became of the children of the Children's Crusade? 483.
Where is the oldest cathedral in Normandy? 184.
What church did St. Augustine consecrate in England? 326.
What is one of the finest specimens of Gothic architecture in Europe? 425.
What church was built to enshrine the bones of St. Cuthbert? 563.
What cathedral offers examples of all styles of Gothic architecture? 610.
Where is the Augustinian monastery which once was the home of Martin Luther? 623.
What dome served as a model for St. Peter's? 683.
Where is the famous bell Great Peter? 774.
What cathedral, begun in 1386, was finished by order of Napoleon? 1223.
Where is one of the great towers of Italy? 1245.
Where are the two cathedrals of Notre Dame in France? 1422, 149.
How high is the belfry tower of St. Bavon's cathedral in Ghent? 763.
What cathedral has a cedar crucifix dating from A. D. 782? 1122.
How far back do the annals of Westminster Abbey go? 1111.
What is one of the finest Byzantine churches from the period of Constantine? 93, 447.
What is the highest church-spire in England? 1665.
Where is a son of Columbus buried? 1729.
What is one of the finest Gothic churches in Italy? 1753.

FRANCE.

Do the French emigrate largely? 706.
Who was the earliest historian of France? 704.
What was it called by that writer? 704.
What was its condition when invaded by Cæsar? 704.
What people succeeded the Romans in power? 704.
What dynasty did Clovis found? 704
Who founded the Carlovingian dynasty? 704.
Who was the real founder of the French monarchy? 704.
What caused the enmity between France and England? 704.
What was the Seventy Years' Captivity? 1467.

What was the Salic Law? 704.
What great battle was fought at Crécy? 476. At Poitiers? 1512. At Agincourt? 26.
During what period did the Valois monarchs occupy the throne? 2000.
What king was called the father of his people? 704.
Under what king did the house of Guise become powerful? 704.
What effect did the massacre of St. Bartholomew have upon the country? 704.
Who was the first of the Bourbon princes? 704.
What king first lived in the palace of the Tuileries? 1949.
Who caused the overthrow of the Huguenot party as a political power? 1612.
In whose reign did France reach its highest point of luxury and power? 704.
What did Colbert do for France? 420.
Who were the two greatest generals during the civil wars? 1953.
What wars were closed by the Treaty of Ryswick? 1650.
What effect had the revocation of the Edict of Nantes? 704.
Who abolished the compulsory labor of the poor on the public roads? 1954.
When did the French Revolution break out? 704.
What occasioned it? 717.
What was the character of Louis XVI.? 717.
When was the Bastille taken? 717.
Who were the Girondists? 717.
Who were the Montagnards? 717.
What was the Jacobin Club? 955.
Who led in the Reign of Terror? 717.
What was the Commune of Paris? 434.
What was the Directory? 533.
When did Napoleon become consul of France? 278.
What victory did Napoleon win at Marengo? 1169.
When and by what means was Napoleon declared emperor? 705.
How did Napoleon change the map of Europe? 705.
When and where did Napoleon sign his act of abdication? 689.
What general indirectly caused Napoleon's defeat at Waterloo? 807.
Who was the last of the French kings? 705.
Who was the first president of the new republic? 705.
How did Napoleon III become emperor? 705.
Who attempted to assassinate Napoleon III? 1395.
Who was the first president of the republic after the Franco-German war? 705.
Who succeeded Thiers as president? 1140.

GERMAN EMPIRE.

What skillful leader did much to increase the power and influence of the empire? 759.
By what emperor was Prince Bismarck deposed from the position of chancellor? 759.
When was the first university founded in Germany? 760.
How are the universities controlled? 760.
What is Walpurgis Night, and what caused its origin in Germany? 2038.
When do the Germans first appear in history? 758.
What was their condition at the time of meeting the Roman armies? 758.
What was the origin of the Goths, Franks and Saxons? 758.
After the breaking up of the Roman Empire what kingdoms were formed by the Franks? 758.
What noted person was the first of a succession of rulers that lasted over a thousand years? 758.
How many nations were there in Germany at the time of Charlemagne's death? 758.

How did Henry III strengthen the empire? 758.
When did the famous Frederick I reign? 758.
How did the great monarch Frederick I. spend most of his time? 758.
During the reign of Maximilian I what great reformer began preaching? 758.
How did the Peasants' War and the Thirty Years' War affect the rural parts of Germany? 758.
In 1702-13 what war brought glory to the German arms but was of no advantage to the country? 759.
When did Frederick the Great come into prominence? 759.
What was the condition of Germany during the time of Napoleon's power in Europe? 759.
What combination did the free German states make after the fall of Napoleon? 759.
What war occurred in 1866 for the leadership in Germany? 759.
What part did the southern German states take in the war between France and Prussia? 759.
What was the most important result of this war? 759.

HOLLAND.

When did the Frisians occupy what is now Holland? 879.
In the eighth century they submitted to what ruler? 879.
What Spanish ruler made the Netherlands a country of great importance? 879.
Who delivered the Dutch from the Spanish yoke? 879.
In what century was Holland one of the great powers of Europe? 879.
By what country was her power crippled in the naval war of 1652-54? 879.
What did William III of England do for Holland? 879.
What century marks Holland's decay? 879.
Who was made king of Holland in 1806? 879.
When was Holland added to the French empire? 879.
After the fall of Napoleon what kingdom was formed? 879.
When did Belgium secede? 879.

ITALY.

Who was crowned king of Italy and emperor of Rome in 961 A. D.? 947.
For how many years did the crown of Italy belong to the kingship of Germany? 947.
What was the condition of the Italian kingdom while its foreign emperors were living beyond the Alps? 947.
To what did Emperor Frederick Barbarossa agree in 1177? 947.
How was Italy divided in the fourteenth and fifteenth centuries? 948.
What century was the most disastrous in Italian history? 948.
In the sixteenth century how was the papacy strengthened? 948.
When did Napoleon conquer Italy? 948.
What did the Congress of Vienna do for Italy in 1815? 948.
Who were the leaders in the rebellion of 1848? 948.
When did the emancipation of Italy become complete? 948.
What did the pope retain? 948.
When was King Humbert assassinated? 948.
Who is the present ruler of Italy? 948.

SWITZERLAND.

What is said of the first inhabitants of Switzerland? 1858.
When was Christianity adopted? 1858.
Of what empire was Switzerland formerly a part? 1858.
What caused the men of the forest cantons to begin war against Austria? 1858.
What famous battle ended the Swiss struggles with Austria? 1858.
By what means was other territory won by Switzerland? 1858.
How did Zurich become a Protestant city? 1858.

Against whom was a religious war waged? 1858.
Who was successful in this war? 1858.
In what treaty did the European powers acknowledge the independence of Switzerland? 1858.
By whom was Switzerland seized in 1798? 1858.
When did it recover its freedom? 1858.
What have the various cantons attempted to regain since they recovered their freedom from France? 1858.
Who were the Free Corps? 1413. What was their purpose? 1413.
What league did the Catholic cantons form? 1858.
By whom was a successful war waged against the Catholic cantons? 1858.
When was the present constitution chosen? 1858.

SPAIN.

Of what race do the Spanish nobles claim to be descendants? 785.
What has made Seville one of the country's most famous cities? 1729.
During what siege did women and children throw themselves into the fire while the men fought? 1654.
What is the condition of the Alhambra to-day? 50.
Who were the earliest visitors to Spain? 1788.
What people made the first effort to occupy the country? 1788.
What people were expelled by the Romans? 1788.
When was the Roman conquest of the peninsula completed? 1788.
By what name was Spain known to the Romans? 1788.
When did Spain become the seat of a Gothic kingdom? 1788.
How long did the Moorish kingdom in Spain last? 1788.
When did it reach its highest prosperity? 1788.
Who was the most powerful ruler? 1789.
How were the different provinces united? 1789.
What discovery raised Spain to a high place among European nations? 1789.
How did Philip II become king of the country? 1467.
How did he exhaust the strength of the country? 1789.
For what purpose did he organize "the invincible Armada"? 1467.
Under whose leadership was the Union of Utrecht formed? 1467.
What part did Spain take in the Thirty Years' War, and with what result? 1789.
Who was the first Bourbon king of Spain? 1789.
What queen whom Carlyle called the termagant disturbed the peace of Europe for thirty years? 1469.
What king did the people of the country refuse to recognize in 1808? 1789.
What great naval battle was fought at Trafalgar? 1934.
Who is the present king of Spain? 1789.
What led to the Spanish-American war, and what was the result of this war? 1789.

SCANDINAVIA.

How far back does the history of Denmark go? 520.
What country did Waldemar I conquer? 521.
What was the character of Queen Margaret's rule? 521.
How was Christian I chosen king? 521.
Under whose rule was Sweden separated from Denmark? 521.
When was Norway lost to Denmark? 521. To Sweden? 1855.
With what other people is the history of this country associated? 1361.
When was Norway attached to Sweden? 1361.
When were titles of nobility abolished? 1361.
Who is said to have first conquered the whole of Sweden? 1854.
What were the Swedes in general doing at the time their history begins? 1854.
Who was the first Christian king, and when was he baptized? 1854.
When and under what ruler were the three Scandinavian countries united? 1854.

How did the great general, Gustavus Adolphus, spend the greater part of his reign? 1854.
What acknowledgement did Charles XI win from the diet? 1855.
How did Charles XII make his power felt in Europe, and what was the effect in his own country? 1855.
What two factions arose during the reign of Queen Ulrica? 1855.
Who was Charles XIV? 1855.
What is the most celebrated cathedral in Sweden? 1991.
What is known as the blood-bath of Stockholm? 1828.

RUSSIA.

From what direction did the Russian Slavs enter Russia? 1647.
When was the first written law compiled? 1647.
What kind of government was established in the towns and colonies founded as the Slavs steadily moved eastward? 1647.
What did Prince Andrei Bogalubski do? 1647.
What people conquered the Russians in 1224? 1647.
What effect did the Mongol conquest have upon the civilization of the country? 1647.
When did Russia first try to throw off the Mongol yoke? 1647-8.
What Russian prince succeeded in defeating the Mongols and freeing Russia? 1648.
Who was the first to take the title of tsar? 1648.
What order of Regent Boris Godunoff sowed the seed of serfdom? 1648.
Under Alexis, the Russians gained the upper hand of what rival power? 1648.
What improvements did Peter the Great make? 1648.
What officers were the real rulers under Catherine I and Peter II? 1648.
Under whose reign occurred the first partition of Poland and the widening of Russia's domain? 1648.
Under whose reign was Russia invaded by the French and the city of Moscow burned? 1648.
What did Alexander II do for the serfs? 1648.
Have the mines of Siberia been developed? 1750.
What name was given to the earliest inhabitants? 1750.
What people conquered the country in the eleventh century? 1750.
What class of Russians were the first to invade Siberia? 1750.
When was Russian possession of Siberia acknowledged by China? 1750.
When does the history of Poland begin? 1513.
From the reign of Mieczyslaw, how long did Poland continue as an independent power? 1513.
When did the first partition of Poland take place? 1513.
What countries combined for the dismemberment of Poland? 1513.
Where was Kosciusko defeated and made a prisoner? 1513.
What were the conditions that led to the downfall of Poland? 1513.
What action was taken against the Jews by Alexander III ? 1648.
Of recent years does Russia seem to be progressing? 1648.

TURKEY.

Of what empire is the Ottoman Empire the successor? 483.
Who was its founder? 483.
What sultan conquered Constantinople and when? 1956.
What sultan raised Turkey to its highest military power? 1956.
Who was called the Magnificent? 1956.
What was the result of the battle of Lepanto? 1056.
What generals reduced the Turkish power in Europe? 1956.
What general conquered Egypt? 1956.
Who were the janizaries? 960.
How did Mahmud II rid his empire of them? 960.
What troops have taken their place? 960.

What was the result of the battle of Navarino? 1956.
In what year did Greece become independent? 1956.
When was Turkey admitted into the political system of European states? 1956.
What caused the Russo-Turkish war? 1956, 1957.
How did this war change the map of European Turkey? 1957.
What was the cause of the Armenian massacres? 1957.
When did they occur? 1957.
What was the extent of their design and how far was this accomplished? 1957.
What is the largest city? 1957.
What city contained three thousand statues, including the wonderful Helios? 1607.

JAPAN.

Who is the Japanese Bismarck? 960.
How many small islands in Japan? 961.
What is the population of Japan? 961.
What kinds of wood are grown in Japan? 961.
What makes the coast look like a Japanese screen? 961.
What is the character of a large percentage of the country? 961.
Do Japanese babies cry? 961.
How do the Japanese dress? 961.
What are the houses built of? 961.
What gives Japan a holiday air? 961.
What happens at cherry-blossom time in April? 962.
What are the two religions of Japan? 962.
When did St. Francis Xavier introduce Christianity. 962.
When did true historic records begin to be kept? 962.
What made Japan a hermit empire? 962.
When did the Dutch and Portuguese trade with Nagasaki? 962.
What did Commodore Perry demand in 1854? 962.
What singular distinction belongs to Mutsuhito? 1292.
Who told the powers they had been hoaxed? 962, 1293.
What dramatic changes mark the seven decades of Mutsuhito's life? 1293.
What is the Era of Enlightened Peace? 963.
What did the daring young nobles do in the 50's? 963.
How did the boy-emperor instruct the Japanese representatives? 963
What are the five orders of the new nobility? 963.
After what model was the army organized? 963.
What countries were imitated in the navy? 963.
What countries furnished the pattern for the constitution? 963.
When was Port Arthur fired on? 964.
Where was the first great modern naval battle? 964.
Who helped to end the Russo-Japan war? 964.
How big is Tokyo? 964.
What trouble arose in San Francisco in 1906? 964.
What arts are declining in Japan? 965.

CHINESE EMPIRE.

How many years back do the annals of China extend? 390.
China as an empire dates from what year? 390.
In what year did the present dynasty begin to reign? 390.
What two personages are always found in China, no matter how far back you go? 390.
Whose death in 1405 saved the independence of China? 1914.
From what has the custom grown, since the seventh century, that all officers of the government must be educated? 390.
What are the three religions of China? 390-1.
What is the charcteristic of each religion? 390.
Of what does the governing power of the empire consist? 391.
At what hour of the day does the Grand Cabinet meet? 391.

In what year did European nations begin to trade with China? 391.
What caused the war with England in 1840? 391.
When and by whom was the first treaty made between China and the United States? 391.
When did the present emperor come to the throne? 391.
What was the cause of the war with Japan in 1894? 391.
What was the result of the war with Japan in regard to Chinese territory? 391.
When did the Boxer rising occur? 254.
Who was the instigator of the Boxer rising? 254.
How long were the foreign legations besieged in Pekin? 264.
The representatives of what foreign nations were murdered? 264.
How many persons were killed in defending the legations? 264.
What indemnity was demanded of China by the foreign nations? 264.

GREAT BRITAIN AND IRELAND.

Did the cave-men own domestic animals? 353.
Where did the Celts first make their home? 520.
Why are the Celts said to be one of the oldest distinct races in the world? 116.
What was the nature of these primitive people? 116.
What are the purely Celtic people? 357.
Did these ancient people believe in God and a future life? 554.
What were their bards, prophets and priests called? 554.
What was the most numerous and powerful of the British tribes? 2123.
What is one of the most ancient of British cities? 2123.
Who was the first Roman to invade Britain? 303.
Did the Romans conquer Wales? 2034.
What Roman general spent seven years conquering the island? 26.
What "warrior queen" slew 70,000 Roman soldiers for injuring her people? 232.
What Roman emperor died in England? 2123.
What three tribes conquered Britain after the Romans left? 73.
Why was Britain called England? 73.
What is the meaning of Heptarchy? 73.
Is the English language like the Anglo-Saxon tongue? 1088, 73.
What terrible foes were driven from Wessex by Alfred the Great? 48.
How did he spend the years of peace that followed? 48.
How did the Danish king Canute get possession of England? 583.
What was the noble character of Canute? 328.
What religious difference was there between Canute and his grandfather? 521.
From what countries came the Celts, Angles, Saxons, Jutes, Danes and Normans? 520, 1687.
What marriage led to the introduction of Christianity? 616.
What monk made King Edgar's reign the most prosperous in early history? 562.
What great Englishman helped Edward the Confessor to restore the Saxon line? 776.
When was the battle of Hastings fought? 2085.
What has the battlefield been called ever since? 847.
When was feudalism brought into England? 616.
Why did William the Conqueror invade England? 2085.
How did he avenge a sarcastic remark about his fatness? 2086.
How did William meet his death? 2086.
What price did William Rufus pay for Normandy? 2086.
Which of the Conqueror's sons was known as the Lion of Justice? 862.
Which one was a crusader? 483.
What was the condition of a serf? 1765.
What form of serfdom remained in Scotland until about 1800? 1766.
What ancient people played the bagpipe? 157.
Who was the wife of Geoffrey Plantagenet? 862.

Name the Plantagenet kings? 1501.
What angry remark led to the death of Thomas à Becket? 189.
What were the Constitutions of Clarendon? 189.
How did Richard the Lion-Heart spend the greater part of his reign? 1610.
How was King John Lackland disgraced? 616.
How were the Englishmen benefited by the Magna Charta? 1145.
Whom do the English people call St. Simon? 1257.
What king is known as the English Justinian? 586.
When were all Jews driven from England? 586.
Upon what great principle of justice was the House of Parliament founded? 616.
What did Edward I do for John Balliol, the Scotch king? 586.
What king was cast into prison by his wife? 586.
Who led the Scots in the historic battle of Bannockburn? 586.
What relic of this battle is shown today in Scotland? 170.
What king was for many years an outlaw in his own kingdom? 278.
What war helped to free the lowest orders from serfdom (616) and permanently changed the relations of master and laborer? 587.
Did the famous Black Prince ever become king of England? 587.
When were cannon first used by the English? 476.
Why did Edward II send his uncle on a wild expedition into Spain? 974.
What happened to Richard II upon his return from an expedition to Ireland? 1611.
What put an end to the Wars of the Roses? 249, 587.
What great queen spent 20 years in war and 4 in prison? 1170.
How did Edward IV get the money he needed? 587.
How did Richard III suffer for his numerous crimes? 1611.
What brewer became the father of a line of English kings? 1949.
How did the first Tudor king reunite the red and white Roses? 863.
What admirable qualities had Henry VIII during the first half of his reign? 863.
Who was Catherine of Aragon? 350.
What honorable title was bestowed on Henry VIII by Pope Leo X? 863.
What suggestion did Cranmer make to ease the mind of Henry VIII? 474.
What ruined the reign of Mary Tudor? 1180.
Who is called the Morning-Star of the Reformation? 2114.
When did England become a world power? 607.
What was the dismal end of the Spanish Armada? 103.
What are the great blots on the reign of Queen Elizabeth? 607.
What right had Mary Queen of Scots to the throne of Elizabeth? 1181.
What great poet made the reign of Elizabeth illustrious for all time? 1089.
When did Parliament allow English to be spoken in the law-courts? 618.
Who was called the wisest fool in Christendom? 957.
What caused the struggle between Parliament and Charles I? 368.
What did the nicknames Roundhead and Cavalier mean? 353.
Did Cromwell's government benefit the people of England? 481.
How did Cromwell treat the Irish? 937.
When was Cromwell made Protector? 171.
Why is William III called the first parliamentary king? 617.
When did the present reigning dynasty of England come to the throne? 617.
When was the society of Orangemen formed? 1388.
When were the king and queen of England both crowned sovereigns? 2086.
What celebrated queen was the mother of 17 children? 75.
Who are the peers of England? 1424.
When was Sir Robert Walpole actual ruler of England? 2038, 751.
Describe the South-Sea Bubble. 1787.

Who is the prime minister of England? 300.
What eminent statesman was prime minister to George III? 751.
What caused him to lose the American colonies? 751.
When did the British East India Company settle in India? 920.
What victory fastened England's rule upon Bengal? 411.
When were the exclusive privileges taken away from the East India Company? 576.
What famous trial of seven years was held over East Indian affairs? 847.
How did the Seven Years' War affect the American colonies? 1727.
What famous general was known as the Iron Duke? 2067.
When was the 3rd of Sept. changed to the 14th, to the consternation of ignorant people? 307.
What was the Manchester Anti-Cornlaw League? 416.
Why was Victoria the most constitutional monarch of England? 2019.
What did the great reform-bill do for the English people? 617.
What brought an end to the Crimean War? 478, 1716.
When did the Indian Mutiny occur? 354.
What famous general was born at Cawnpore? 1619.
How did Queen Victoria become endeared to the American people? 2019.
What war cost England $937,000,000 in four years? 235.
What immense service did "Little Bobs" render his country? 1619.

AMERICA.

Who recommended Columbus to Queen Isabella? 431.
Which of tne West Indies is said to have been first discovered? 157, 2070.
How is the Duke of Veragua related to Columbus? 431.
Was Columbus the first to believe that the earth is a sphere? 745.
What famous maker of maps first showed that America is a new continent? 301.
What did the Filipinos do to Magellan on the first voyage around the globe? 1144.
What letter to a school-friend caused America to be named? 2016.
Did the man who discovered the Pacific name it? 1407.
Where did the American Indians come from? 60, 921.

MEXICO.

When did the Toltecs come to Mexico? 1216.
Who invented the Mexican calendar? 1216.
Who was Aztlan? 150.
What broke the heart of the last Aztec emperor? 1257.
How were the Aztec women educated? 150.
Where are some Aztecs living today? 1668.
Where did Cortes burn his ships? 462.
Was Cortes a common adventurer? 462.
What is one of the romances of history? 1216.
How are the records of the Aztecs preserved? 150.
How did the Spaniards treat the native Mexicans? 1216.
What did New Spain include? 1216.
How did the priest Hidalgo serve his countrymen? 1216.
Who established the Mexican republic? 1216.
Under what incompetent monarch did Spain lose Mexico? 656.
What is the character of Emperor Augustine I? 949.
What relation had the Mexican states to the central government? 1675.
Under what president was war again declared? 1216.
Where did Maximilian make his last stand? 1574.
How did he directly cause his own death? 1192.
What was the pathetic fate of his loyal queen? 1192.
What faithful general was executed with him? 1239.
Who is the ablest of Mexican rulers? 1216.

Of what nationality is the higher class? 1216.
What man's life offers no parallel in history? 528.
At what age did Diaz walk 250 miles to enlist? 528.
Why is Diaz called the perpetual president? 528.
What is the salary of Diaz? 529.
Where is his home? 367.
What great emperor is compared with Diaz? 529.
What were the parents of President Juarez? 981.
When did he take over the government? 981.
When was his government recognized by the United States? 981.
When did Santa Anna become president? 1675.
In what army did he serve against his country? 1675.
How did he cause the loss of Texas? 1675.
What battle did he lose to Gen. Sam Houston? 1673.
When was he told to leave the country? 1675.
What is one of the most prosperous manufacturing towns in Mexico? 1256.
What did Las Casas do for the native Indians? 344.
What people founded the City of Mexico? 1213.
What lineal descendant of the ancient emperors wrote a complete history of Mexico? 951.
What is the holiest shrine in Mexico? 1214.

CANADA.

Who visited Newfoundland five years after Columbus discovered America? 1341.
How did the West-of-England fishermen conceal their profitable voyages? 1341.
What character had the Newfoundland colonists? 1341.
What brilliant English victory of the Seven Years' War was gained here? 1341.
When was the first civil governor appointed? 1341.
What remarkable resemblance does Newfoundland bear to the British Isles? 1342.
How did the first railroad benefit Newfoundland? 1341.
From what part of England did the early settlers come? 268.
Is Newfoundland a part of the Dominion of Canada? 269, 320.
Who discovered the mainland of Canada? 343.
What name did the French give to Nova Scotia? 6.
What part of the population is Acadian? 6.
What splendid schools and colleges flourish in Nova Scotia? 1363.
What great king reigned in England when Nova Scotia was discovered? 319, 863.
Why did the Indians call Halifax Chebucto? 827.
In what famous treaty was Nova Scotia acknowledged to be British territory? 319.
Tell some interesting facts about that famous Englishman who founded the Hudson Bay Company. 1644.
What was the extent of its territory? 893.
Who was the last resident governor of the Hudson Bay Company? 1836.
What was the first white settlement in Manitoba? 1159.
From what country did these settlers come? 1159.
When did Manitoba become part of the Canadian federation? 1159.
Near what fort did the village of Winnepeg grow up? 2095.
What has made Alberta famous? 307.
What caused the Red River Rebellion? 1596.
What was the fate of the leader? 1613.
What archbishop induced the rebels to lay down their arms? 1596.
Who commanded the Red River expedition? 2103.
What foolish act of a mob gave Willian Lyon MacKenzie increased influence? 1138.

Who was the only Canadian refugee to whom an amnesty was refused for rebellion? 563, 1138.
What caused the rebellion of 1837? 1385.
What Canadian premier took part in this rebellion? 343.
What has caused the mistaken impression of Canadian climate held by Europeans? 1966.
What name did Cartier give to the Indian village of Hochelaga? 343.
What is the commercial metropolis of all British America? 1285.
Where did the French missionaries and traders start from on their daring expeditions? 1572.
What are some points of interest in the most historic city of Canada? 1573.
How did France lose Canada? 1117.
What great war led to the Treaty of Paris? 1728.
What struggle increased the British possessions in America twenty-fold? 716.
How did George Washington help England to gain Canada? 714.
What great Canadian missionary was sent by Frontenac to explore the Mississippi? 1175.
How did Joliet lose all his maps and papers on this voyage? 977.
What large island is owned by Menier, the French chocolate-manufacturer 80.
What caused the assassination of that romantic hero, La Salle? 1033.
What Franciscan explorer sailed with La Salle? 861.
Who was Henri de Tonti? 1923.
What was the dying tribute Montcalm paid to his noble English conqueror? 2103, 1255.
What memorable battle wrested supremacy from the French? 4.
Who was the first Roman Catholic bishop of Quebec? 1037.
What is a proof the the broadmindedness of the British government? 1037.
Who is Quebec's most honored citizen? 1036.
What distinguished citizen of Quebec endowed a magnificent agricultural school? 1573.
What great university was founded in 1811? 1136.
What Canadian educator stands in the first rank of American thinkers? 1189, 1037.
What great French pioneer was loved by the wild people of the forest, by courtiers and close-fisted merchants? 366.
What island is a paradise for summer tourists? 1547.
How could the Indians get to any part of New Brunswick? 1324.
What splendid park is a paradise for campers? 50.
When did the actual career of Ontario begin? 1384.
When did the Fenians invade Canada? 655.
What splendid agricultural college in Ontario? 810, 1228.
What governments closely approach civic perfection? 1385.
What large city is supplied with electric power from Niagara Falls? 1924.
What department-store employs 4,000 hands? 1924.
Where is the residence of the governor-general of Canada? 1400.
What improvements have been made in the St. Lawrence channel since 1857? 1659.
What building is architecturally one of the most imposing on the continent? 1924.
What part of Toronto University was founded by the Basilian Fathers? 1661.
What college sent out the first missionaries for the Church of England in Canada? 2115.
What noble count changed the course of New World history? 720.
On what historic ground did he camp 234 years ago? 1005.
How is Niagara illuminated? 1345.
What was Anthony Trollope's tribute to Niagara Falls? 1346.

What naturalist discovered the lowest form of animal life? 509.
What dispute was jokingly called the Aroostook war? 111.
Who discovered the Klondyke goldmines? 1007.
What celebrated dispute did this reopen between Canada and the United States? 38.
What is Sir Wilfrid Laurier's patriotic hope for the future of Canada? 1036.
What Irish representative to the British Parliament was once leader of the Liberals in Canada? 225.
Upon what Indian reserves was built the first church (Episcopalian) in Upper Canada? 260.
What Indian chief translated *The Gospel of Mark* and *The English Prayerbook* into Mohawk? 260.
Where was the first large suspension-bridge built? 266.
For how long is copyright granted in Canada? 453.
How many times have Fenians invaded Canada? 655.
What Canadian statesman was governor of the Windward Islands and later of British Guiana? 875.
What indemnity did the Hudson Bay Company receive for its rights? 893.
Where is left a remnant of the Huron Indians? 900.
What Canadian statesman was offered a knighthood three times but declined? 1137.
When was use first made of power at Niagara? 1346.
When was work first begun at Niagara to develop electric power? 1346.
What Anglo-Canadian novelist is a member of the British Parliament? 1423.
What Indian chief was a brigadier-general in the War of 1812? 1879.
What Indian put off his uniform and sword and dressed like an Indian because he believed he would be killed in battle? 1880.
By whom was Vancouver founded? 2001.
How do the Huron Indians tell the story of their origin? 900.
Where was the first modern cantilever bridge built? 267.

UNITED STATES.

How should United States history be studied? 1977.
How did Queen Elizabeth playfully name Sir Walter Raleigh's instability of character? 1584.
When did Raleigh say: "This is a sharp medicine, but it is a sure cure for all diseases"? 1584.
How did Raleigh honor his queen? 2024.
The land of what great city was bought for beads, brass ornaments and bright cloth? 1336.
What celebrated Virginian named New England? 1149.
Where is Plymouth Rock preserved upon which the Pilgrim Fathers landed? 1507.
What is the first written constitution we have any historical account of? 1490.
What caused the first battle between Englishmen in America? 1182.
When was the Mississippi River the western boundary of Virginia? 2024.
Why is Connecticut called the Constitution State? 444.
Who was exiled for saying the government should not control religion? 2088.
Who was the first Chief Tammany? 517.
To what rebellion can the Revolution be traced? 154.
What six great colleges were founded before 1700? 1977.
What dispute was settled by the celebrated Mason-and-Dixon line? 1184, 1448.
What fortress, taken and destroyed by the New Englanders, cost $5,000,000, and was 30 years in building? 1118, 1977.

When did the Continental Congress make this noble declaration: "Religion, morality and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall be forever encouraged"? 1375.

Where was Washington initiated into the business of war? 1496.

Why did he think Providence had preserved him for some great duty? 2048.

What explorations were carried on by Jesuit missionaries? 714.

What important mission was entrusted to Washington when he was only 21? 714.

What war prepared the colonists for the War of Independence? 1977.

At what meeting in 1754 did Benjamin Franklin suggest the idea of uniting the colonies? 39.

What noted Indian fighter had the first white child in Kentucky, and performed the first marriage ceremony? 245.

What governor forced women to wear veils at all public assemblies? 614.

Who were the first Puritans? 1564.

Tell some of the adventures of Captain John Smith? 1770.

What was one of the direct causes of the American Revolution? 1978.

Upon what great principle of justice was Parliament itself founded? 616.

What eminent English statesman made one of his greatest speeches in favor of the colonists? 1808, 1496.

Where was the first regular newspaper published? 248, 1343.

What was the original name of *The Saturday Evening Post*, founded by Franklin at 23? 708.

Where did the first colonial Congress meet? 442.

What was the Continental Congress? 443, 1978.

When did the first Congress of the United States meet? 443.

Whose portrait was on the first United States postage-stamp? 1809.

What postage-stamp is worth $375? 1809.

Who was the first successful postmaster-general? 1536.

When was letter-postage reduced to two cents an ounce? 1536.

When did one cent and two cent postal cards come into use? 1537.

How many million pieces of mail go to the Dead Letter Office per year? 510.

What prophetic words were inscribed on Liberty Bell 23 years before the signing of the Declaration of Independence? 513.

At what battle did the political existence of the United States begin? 1978.

What celebrated strategy proved the turning point of the war? 1978.

How did the famous Ordinance of 1787 help to bring about the Federal Union? 1979.

When was the city of Washington made the capital of the nation? 2087, 1980.

What president first occupied the White House? 2047.

What fourteen masters did George Washington have to serve? 2049.

What high place did Frederick the Great give to General Washington? 2049.

Who uttered this celebrated tribute to Washington: "First in war, first in peace and first in the hearts of his countrymen"? 2049.

What president more than doubled the area of the United States? 1980.

What president was called the sage of Monticello? 968.

What brave little woman guided the celebrated Lewis and Clark Expedition? 1061.

How did Jefferson almost cripple New England? 611.

When did the idea of states' rights first become prominent? 1814.

Why was the Hartford Convention accused of treasonable designs? 846.

What famous Indian was an English brigadier-general? 1879, 1876.

In what administration did the president belong to one party and the vice-president to another? 1520.

What two brilliant orators have been defeated three times for the presidency? 280, 407.
What are the words of the Monroe doctrine? 1253.
Who were the National Republicans? 2075.
When did the Democrats and Republicans form one political party? 623.
What sarcastic name was given to the Compromise Bill of 1850? 1382, 438.
What was the Missouri compromise? 1242, 407.
What was intended by the Wilmot proviso? 546.
What did "squatter sovereignty" mean? 1981, 546.
Who was the author of the Nullification Act that Jackson called treason? 308, 1785, 852.
How did Texas avenge the death of David Crockett and his heroic comrades, 479, 36, 1673.
What was the first great blow delivered to states' rights? 2063, 836.
What laws protected the kidnapers of free negroes and forced these again into slavery? 722.
What was the Gadsden purchase? 728, 100.
What territory was discovered by an Italian friar and an African slave? 100.
What Indians live in immense apartment-houses five stories high? 1559.
Are the cliff-dwellers the same as cave-men? 100, 353.
What is the Urim and Thummim of the Mormons? 1263, 1992.
What conflict did the Mormons have with the Federal government? 1995.
Who invented the Macintosh coat? 1640.
Name six remarkable inventions that appeared between 1830 and 1850? 1981.
Who were the Underground Railroad "conductors" for fugitive slaves? 1966.
What was the memorable Dred-Scott case? 1869.
What chief justice decided that slaves were not "persons" but "property"? 1982.
What state declared that it might annul the laws of Congress? 1785.
What colony first raised a military force to oppose English government? 1785.
What state was the leading exponent of states' rights? 1785.
What state was the first to secede before the Civil War? 441.
How has the state been saved from the ignorant negro voters? 1785.
How were the Confederate troops outnumbered in the Civil War? 1982.
How many men were killed in the draft-riots in New York city? 548.
What general was dismissed from the army after the Battle of Bull Run? 1531, 288.
What great battle decided the Civil War? 762.
After what desperate battle did Grant write his famous message: "I will fight it out on this line if it takes all summer"? 1804.
What six books did Lincoln own when he was 21? 1073.
How did some fence rails he split help to win him the presidency? 1073.
Did the Federal government intend to assail the Confederate states when they seceded? 1074.
What Confederate was one of the greatest soldiers America has produced? 1046.
Did Robert E. Lee know the Union must triumph? 1047.
How did Grant save Lee from being tried for treason? 794.
What is the Fifteenth Amendment? 1595.
Who were those low-principled northerners known as carpet-baggers? 340.
What was the dreaded Ku-Klux Klan? 1013.
Why did the government issue greenbacks? 1792.
Who introduced Mardi Gras in this country? 1169.

When and where was the first railroad built in the United States? 1581.
How many miles of railroad in the United States in 1908? 1582.
How many miles of railroad in the world in 1908? 1582.
What is the strength of the United States army and navy? 1984.
What is the population of the United States of each: Indian, Negro and foreign born? 1976.
What is the salary of each cabinet officer? 1984.
When was the Naval Department of the United States formed and by what officers was it controlled? 1985.
How did the naturalization laws of the United States compare with those of other countries? 1307.
How is the Signal Service of the United States operated? 1755.
In what way are taxes imposed in the United States? 1874.
How many judges are there in the Supreme Court of the United States? 467.
What is the duty of consuls? 448.
What is the present policy of the United States government with regard to the Indians? 921.
To whom is the United States indebted for the purchase of Alaska? 1730.
What is the most populous city of southern California which was founded by the Spaniards? 1116.
What came near involving the United States with Chile in 1891? 388.
How is the number of representatives in Congress regulated, and how often is their number changed? 442.
Who commanded the famous *Alabama?* 1722.
When did the first Colonial Congress meet? 442.
What celebrated Polish general took part in the American Revolutionary War? 1011.
What was the beginning of the postoffice? 1536.
Which was the last settled of the thirteen states? 752.
Where are the mints of the United States? 1237.
What famous battle was fought at Gaines' Mills? 728.
What are the most noted cases of impeachment? 917.
In what war was the *Monitor* first used? 1251.
What persons are barred from serving as electors? 596.
What tribe of Indians took sides with the British during the Revolutionary War? 376.
Why was the first political party called Federalists? 1519.
What naval battle is known as Perry's victory? 1454.
Which presidents have been elected by the House of Representatives? 1545.
Whom do the Americans address as His Excellency? 12.
In what famous battle did the British lose twenty-six hundred and the Americans but six men killed and thirteen wounded? 952.
What general in the Civil War was called Superb? 833.
What harbor was headquarters for the northern division of the American fleet during the War of 1812? 1651.
What is the Signal Service? 1755.
What was the beginning of the second Seminole war? 1396.
When was the town of Chicago organized? 379.
When did the Democratic party come into existence? 1520.
What year were there four candidates in the field, all claiming to be Democrats? 1520.
Who led the Whig party and what ground did it take? 1520.
What first weakened the Whig party? 1520.
When did the Whig party cease to exist? 1520.
When did the Anti-Masonic party arise? 1520.
Of what was the Republican party formed, and when? 1520.
When were each of the three following parties formed: Greenbackers, Constitutional Union and Union Labor party? 1520.

Where did the first and the last battle of the Revolution take place? 1520.
What were the principal features of President Polk's administration? 1518.
Who commanded the "Green Mountain Boys," and in what battle? 52.
When and by whom was the District of Columbia ceded to the United States? 535.
What is the oldest permanently settled city of Iowa? 556.
What was the first instance of negro slavery we have in the United States? 2024.
When was the beginning of the modern navy of the United States? 1313.
What caused the Seminole War in the United States? 1722.
What was the Stamp Act and when was it repealed? 1808.
When did St. Louis become a town? 1659.
Who discovered the source of the Mississippi River? 1690.
Who was appointed commander of Florida with orders to plant a Spanish colony, and with what results? 1203.
What was the early postal service of the United States? 1536.
What is the extent of the Postoffice Department? 1537.
What are the duties of the office of Attorney-General? 1985.
Who was founder of Maryland? 1182.
Which was the first state to ratify the Constitution? 517.
What slave state did not secede during the Civil War? 517.
In what state of the Union are the people nicknamed the Blue Hen's Chickens, and why are they so called? 517.
What state has a pillory and whipping-post? 517.
What state's name signifies the Land of Flowers? 683.
How and by whom was Florida discovered? 683.
What is the great corn state of the Union? 935.
What Indian war cost the United States thirty million dollars? 379.
What tribe of Indians owned slaves and fought with the south? 394.
Who were the first people to visit Michigan? 1219.
When was Lincoln's name presented for the vice-presidency by the Illinois delegation at the national Republican convention? 1074.
Who made the first settlement in Alabama? 36.
What was the most important act of Jefferson's administration? 952.
What was the most terrible and destructive battle of the Civil War? 762.
When did Congress adopt the national bank system? 167.
What states have passed laws prohibiting the sale of liquor? 1927.
What was the first settlement after Jamestown? 38.
When was the United States flag adopted? 679.
What was the earliest English settlement in the United States? 959.
Where are the United States mints located? 1238.
What city in the United States is third in importance as to exports? 1330.
Where is the United States Artillery School? 115.
Where is the seat of our Naval Academy, and by whom founded? 74.
What was the character of the first United States postage stamp? 1809.
When and by whom was the first tariff act drawn up in the United States? 1871.
What was the first tariff measure enacted in the United States to protect industries? 1871.
What state passed an act in 1833 declaring the United States tariff-law null? 1785 .
What completed the ruin of the Federal party in the election of 1816? 845.
What was the largest amount ever owed by the United States government? 1305.
When did postal cards come into use? 1537.
When did free mail delivery begin? 1537.

What treaty was made on the spot where Philadelphia now stands? 1446.
What bishop was appointed major-general by Jefferson Davis? 1518.
What territory comprises the Louisiana purchase and what was the consideration? 1119.
When was Louisiana admitted as a state, and what it its area? 1119.
What large concession did Mexico make with the United States in 1848? 1216.

ASIA.

Where is thought to be the cradle of civilization? 119.
What European countries have at different times founded colonies in Asia? 119.
What European countries are now struggling for mastery in Asia? 119.
Who was first to sail around Asia? 1750.
What famous tomb in India is described by travelers as a glimpse of Paradise? 1866.
What was the beginning of the Selucian Empire? 1720.
When was Phœnicia in her greatest power and glory? 1473.
What Assyrian placed the ancient world under one ruler for twenty years? 125.
What city was the center of the world's traffic in the twelfth century? 278.
What country was closed against other nations till 1876? 1011.
Who was the first Assyrian king to invade Egypt? 625.
What first weakened Tyre when at its best? 1963.
What city was the home of Xerxes and Cyrus the Great? 1680.
Who was the greatest king of Babylonia? 153.
What is the most extensive and powerful kingdom in western Asia? 1455.
Who was the real founder of the first Assyrian empire? 125.
At whose death was Turkestan split into fragments? 1955.
From what does Mesopotamia derive its name? 1210.
In what way has an accurate account of the reign of Darius of Persia been obtained? 504.
What evidence have we that the Assyrians reached a high degree of wealth and civlization? 125.

AUSTRALIA.

When did Australia have its beginning as a British settlement? 142.
For what purpose were these early settlements used? 143.
When was Australia found on a geographical chart? 142.
When did the reception of convicts cease? 144.
What gave an impulse to the colony in the early fifties? 142.
When did the government become representative? 142.
When did education come under state control? 143.

INDIA.

The invasion of India by what people brought the Sanskrit language and the Hindu religion? 919-20.
Who was the greatest sovereign India ever had? 920.
What European nations began settlements in India early in the eighteenth century? 920.
When did the British East India Company settle in India? 920.
When and by whom was the first charter granted to the East India Company? 576.
Who was the youngest governor-general ever sent to India? 497.
When did the British East India Company cease to exist? 920
What emperor of India liked to be called Conqueror of the World, and was made a prisoner for life in his own castle? 140.

LITERATURE

ORIENTAL.

What can you tell about the vastness of Chinese literature? 1080.
Are there any others that are as large? 1082.
Who was the greatest and wisest of Chinese? 441.
What has been his influence? 441.
What are the Chinese classics? 1080.
Whose books were used in the Chinese government examinations until a few years ago? 1080.
What are the histories of China? 1080.
Of what are the philosophical and art divisons of the Chinese library composed? 1080.
Of what is the *belles-lettres* division composed? 1080.
Is Chinese poetry an important division of their literature? 1080.
What classes of Chinese literature, though really good, are not included in the national library? 1080.
When was paper first used in printing? 1080.
What is the character of Sanskrit literature? 1080.
What kind of writings are the most important Hindu writings? 1080.
Did the Hindus write any great epic poems? 1080.
What class of Hindu writings is found all over the world? 1080.
What is the rank of Hindu drama as compared to Greek and to English? 1080.
What are the oldest literary documents known? 919.
What literatures were lost for thousands of years and how were they recovered? 125, 152, 1081, 1635, 486, 873, 1082.
How early do we find Babylonian writings? 1080.
What is their nature and how were they written? 1080.
Had the Babylonians any great poems? 1080.
What kinds of books did they write? 1080.
In the ruins of what famous city was Assyrian literature found? 1352.
What was the principal object of the foundation of the Assyrian library? 1081.
What can you tell about this library? 1081.
When was most of it written? 1081.
Which came first: Babylonian or Assyrian? 125, 152, 1081.
Did Assyrian influence Hebrew literature? 1081, 125.
For what are almost all civilized nations indebted to the Phœnicians? 1081.
Who was the Marco Polo of the Phœnicians? 1081.
Where was the key to Assyrian, Babylonian and Persian literature found? 271, 486, 504, 1040, 1352, 1589, 1635.
What is the Zend-Avesta? 1081.
Who is believed to have written it? 2136.
What people use it? 1426.
When did Persian literature flourish most? 1081.
With whom did Persian poetry reach its height? 1081.
Who was the greatest of Persian lyric poets? 1081.
Who wrote the *Rubaiyat?* What does the name mean? 1382.
What is the greatest production of Hebrew literature? 1081, 209.
What sorts of books did its authors write? 209.
Were any Jews historians? orators? philosophers? poets? 209.
What writings by Jewish writers are not included in the Protestant canon of the Bible? 1081.
What are the great translations of the Bible? 209, 759, 970, 1915, 2030, 2114.
Who was the first of modern commentators on the Bible? What influence did he have on the growth of Judaism? 1081.
What great modern philosopher was a Jew? 1799.
Who are some of the modern Jews who have taken prominent rank in literature, science and art? 1082.
What are Egyptian hieroglyphics? 873.
How were they deciphered? 1635.

What is *The Book of the Dead?* 1082.
Who was Egypt's first historian? 591, 1157.
What varieties of literature had the Egyptians? 1082.
How early was the science of medicine known in Egypt? 1082.
Who was Egypt's Homer? What poem the Egyptian Iliad? 1082.
Did the Egyptians write novels? 1082.
What early literature is Christian? 1083.
What was the most important result of Syriac writings? 1083.
What is the oldest book in Syriac in existence? 1083.
How were prize poems in Arabia sometimes written? 1084.
What can you tell about the expansion of Arabian literature in the eighth and ninth centuries? 1084.
What was the condition of Arabia during Europe's dark ages? 1084.
Upon what were Arabian law and theology based? 1084.
In philosophy whom did the Arabians regard highly? 1084.
In mathematics for what are we indebted to the Arabians? 1084.
From what Arabian literature did that of Europe gain much? 1084.
How did the stories of *The Thousand and One Nights* come to be told? 1084.

GREEK.

What are the two great Homeric poems, and what can you tell of them? 1082, 882.
Was Homer the only epic poet of Greece? 870, 1082.
What is the difference between a lyric and an epic poem? 1510.
Who was the greatest Greek lyric poet? 1082, 1491.
What other lyric poets won undying fame? 96, 1678, 1759.
What caused the growth of the drama? 1082, 550.
Who were some of the most important Greek dramatists? 20, 97, 632, 1781.
What tragedian does tradition tell us was killed by an eagle dropping a tortoise, to break its shell, on his bald head, mistaking it for a stone? 20.
Who was the greatest Attic tragedian? 20.
Who is the head of the Greek dramatists? 550.
What Greek dramatist is called the world's greatest laugher? 97.
Who and what was Menander? 550, 1082.
Who were some of the most important Greek historians? 1082.
Which was the father of history? 868.
Which was the philosophical historian? 1908.
Which was the gentleman of leisure? 2117.
Who were the three great Greek philosophers? 1082.
Which one has had great influence on all thinkers since? 1082.
What are the distinctive principles of the teachings of Socrates? 1502.
What feature of Greek law caused oratory to become so prominent? 1082.
Who was the greatest of orators? 1082.
Who was the greatest writer of Greek comedies? 97.
What city, founded not long before Demosthenes died, rivaled Athens in literature and scholarship? 45.
What great translation of the Scripture was made there? 972, 209, 1762.
What island contains but three towns of any size, though Vergil told of its hundred cities? 477.
What has made Troy famous to the literary world? 1945.
What made the Greek poet Theocritus famous? 1899.
From what is the language of the Greeks supposed to have been derived? 801.
What caused the decline of Greek literature? 1082.
What was the most famous ancient library? 46.
Where was it? Who founded it? 591.
What story is told about its destruction? 46.
What was Plutarch's professed purpose? 1506.

What important theologian sought to combine the results of Greek philosophy with the gospel during the second century? 1393.
What is meant by the term pseudonym? 1188.
To whom is the world indebted for the first complete edition of Homer?

ROMAN.

When did Roman literature commence? 1083.
Did Rome ever have any really native literature? 1083.
Upon what was Roman drama founded? 1083.
Who were the Roman dramatists? 1083.
By whom and when was the satire founded? 1083.
What is said to have caused the death of Terence? 1891.
In what branches of literature did Rome excel? 1083.
Who was the greatest of all epigrammatists? 1178.
What can you tell of Cicero? 1083.
What noblest Roman of them all was author, orator, scholar, soldier and statesman. 303.
When was the Augustan age of Roman poetry? 1083.
Who were some of the great writers of this age? 1083.
What can you tell of their writings? 1083.
Do any Roman epics compare with those of India and Greece? 1083.
What man of the world is one of the world's lyric poets? 1083.
Who was the chief comic dramatist of Rome? 1503.
Who were the great Roman prose writers? 1083.
Which were historians? Which essayists? Which letter-writers? 1083.
Who was Nero's tutor, and what was his fate? 1723.
What emperor was Plato's philosopher ruling the world? 139.
Who was the earliest and greatest letter-writer in the world? 398.
Who was the last of the great Latin poets? 984.
From whom do we derive our impressions of the life of the upper classes of the first century? 1505.
Who was the real first Roman historian? 1083.
What great writer wrote satires against the rich? 1083.
Who were other Roman writers of a later period? 1083.
What Christian authors glorified the last days of Latin literature? 58, 137, 970.

ITALIAN.

What was the literary language of Europe during the middle ages? 1084.
Who formed a trio of great Italian writers? 1084.
In what country did literature reach its height in its opening? 1084.
What did Dante's *Divine Comedy* do for literature and the Italian language? 501.
Who was the Laura whom Petrarch immortalized? 1462.
What works made Petrarch famous? 1084.
What other great poets are glories of Italy? 96, 1873.
Are there any Italian dramatists? 1084.
What Italian historical product has been translated into most modern languages? 1084.
Who was the foremost Italian of the seventeenth century? 730.
What makes Manzoni's writings valuable literature? 1084.

FRENCH.

Who figure in the oldest literature of France? 1625, 368.
The earliest writings of the French were of what kind? 1085.
What was Provencal? Who were the troubadours? 1944, 1554.
What stirred the literature of France during the sixteenth century? 1085.
Who was known as the jester of France? 1577.
What Frenchman was the first and greatest of essayists? 1254.
What is the greatest collection of printed books in the world? 1422, 1064.
Who wrote *Institute of Christian Religion?* 311.
What French queen was a considerable author? 1170.

For what is the age of Louis XIV noted? 1085.
What Catholic churchmen were great pulpit-orators? 1187.
Who were some of the leading writers of this period? 1085.
What work of this period is precious to Christians? 1085, 1427.
What French scientist and writer founded modern philosophy? 522.
French life under Louis XIV is set forth in what writings? 1085.
What has been the most brilliant period of the Provencal language? 1554.
What were the characteristics of French literature of the eighteenth century? 1085.
What work influenced French thought to a great extent during this period? 1085, 1256.
Who was the queen of letter-writers? 1729.
What can you tell about Voltaire and his influence? 2029.
Who was considered the greatest literary critic of modern times? 1663.
Who was Rousseau? 1638.
What natural history, though not authentic, is considered a French classic? 1085, 286.
What was the leading novel of the eighteenth century? 1085, 1057.
Who was the prince of French orators? 1238.
What romantic idyl was Napoleon's favorite book? 1662.
In the nineteenth century what school arose in French literature? 1085.
Who were the leaders of this school? 1085.
What are some of the writings of the most popular authors of the romantic school? 1085.
Who was considered the greatest French novelist? 1085, 895.
What woman was the George Eliot of French fiction? 1673.
In what department of French literature of the nineteenth century has the greatest work been done? 1085.
Who is the chief French poet of the nineteenth century? 1085.
What other French poet is almost as famous? 1292.
Who are some of the leading nineteenth century historians? 1085.
What French historian set historical study on foot in Europe in the nineteenth century? 813.
Who are the leading philosophers and critics of this century? 1086.
Of whom is it said: "He found French poetry a piece of brick and stucco and left it a palace builded of jewels?" 895.
How did the author of *Monte Cristo* bring himself into disrepute? 560.
Who joked the Provençals and created *Tartarin of Tarascon?* 506.
Who was the earliest French historian? 704.
What notable journalist, although French, wrote in English? 230.

SPANISH.

What is the *Poem of the Cid?* 1086, 398.
What is the best book of chivalry? 56.
How did the Spanish obtain their ballads? 398, 1086.
When were the best Spanish lyrics written? 1086.
What Spanish scholar published the second polyglot Bible? 2118.
What drama is a novel, what novel a drama? 1086.
Who were the lyric poets of Spain? 1086.
Of whom did Byron say: "He laughed Spain's chivalry away"? 361.
What is the best known and best loved of all Spanish books? 1086.
Who were some of the dramatists of the golden age of Cervantes? 1086.
Who wrote nearly two thousand plays? 2007.
When did Spanish literature decline? 1086.
Are any of the best European novels between 1800 and 1900 the work of Spaniards? 1086.
What Spanish orator was a modern Cicero? 347.
What nation has the greatest number of proverbs? 1555.

PORTUGUESE.

What tale of chivalry set European romance agoing? 56.
Who was Portugal's great poet? How did his writings affect the people? 315, 1086.
With whom did the Portuguese literature reach its height? 1086.
What can you tell of the nineteenth century literature of Portugal? 1086.

FINNIC.

What one of the great epics of the world originated in Finland? 1086.
Who discovered it? How did he recover it? 1086.

DUTCH.

Who was the first writer to create a good Dutch prose? 1086.
For what is Vondel noted? 1086.
What was the only book, except the Bible, that for a long time was found in Dutch homes? 1086.
Who were some of the important Dutch writers? 1086.
What Dutchman wrote *Imitatio Christi?* 996.
Which founded international law? 1038, 1086.
Who was the Prince of the Renascence? 623.
What Jewish Dutchman was a great philosopher? 1799.

SCANDINAVIAN.

What is included in Scandanavian literature? 1087.
What do you understand by *Edda?* 1087, 581.
What were the sagas? 1087, 1628.
In what modern literatures do they play a part? 1266, 785, 1606, 1756, 2033, 1347.
What was remarkable about the Icelandic sagas? 1087.
When did the literature of Norway first become of importance? 1087.
What Norwegian was considered one of the great dramatists of his day? 909.
What is the nature of Björnson's writings? 1087, 221.
Who founded the Copenhagen theater, and what were some of his writings? 1087.
What is Denmark's national song? 1087.
Who wrote it? 1087.
What Danish historian revolutionized our ideas as to the first five centuries of Roman history? 1349.
Why do most of us know Hans Christian Andersen? 1087.
Among great critics who is a Dane? 260.
What was the nature of the earliest Swedish writings? 1087.
What great naturalist greatly influenced the literature of Sweden? 1087.
Who was the great theological writer of the eighteenth century? 1087.
What Swedish lady was a famous novelist? 263.
What is the most powerful Swedish novel? 1087.
What epic at once became the most popular poem in Sweden? 1880.

GERMAN.

How far back does German literature date? 1087.
Who were the *Minnesinger?* 1087, 1236.
What two epic poems are considered to be the greatest treasures of German national literature? 1087.
What can you tell of these epics? 1087, 1347.
What great tone-poet used them and the sagas? 2033.
During the fifteenth century what plays rose to their height? 1087, 1238.
Do any of them survive still? 1368.
What famous fable did a German write? 1604.
What fixed the literary language? 1087.
With whom does modern German literature commence? 1087.
Who is called the Luther of German literature, drama and art? 1058.
What German savant almost equaled Newton?

How do German scholars rank with the scholars of the world? 1087.
Who are some of the brilliant philosophers of Germany? 659, 857, 992, 1688.
Who constituted the "ideal" school of philosophy? 659.
What great German philosopher said: "Whoever will tell me of a good action done, him will I thank, though it be the last hour of my life"? 857.
What Scotch philosopher "woke him from dogmatic slumbers"?
Who was Schelling? 1088.
Who are some of the great German historians? 1087.
What German historian lived to be ninety, and wrote about fifty works on history? 1587.
What German historian wrote a Roman history? 1249.
Who was the great scientist of Germany? 897.
Who was Goethe and what can you tell about him? 777.
What English novel influenced Goethe greatly? 2018.
Whose early writings greatly excited the German people? 1087.
How did Goethe and Schiller rank as dramatists? 550.
How do they rank in the world of letters? 1088.
What influenced the study of Shakespeare in Germany? 1087, 1689.
What satirist exerted a mighty influence over the German middle classes? 1613.
About 1850 who ranked with Goethe and Schiller? 1087, 858.
Who is the most eminent German novelist? 718.
Who else were German novelists? 136, 718.
What German was a tone-poet? 2032.

CELTIC.

What remarkable people's literature is chiefly known in its French and English forms? 357.
What famous poem from this literature created a sensation in the eighteenth century? 1397.
What was the name of the poets of ancient Britain and Gaul? 554.
What British hero gave rise to much of this literature? 114.
What famous poet was associated with him? 1207.
What noble institution are they said to have founded? 1638.
Who were some of its noted characters? 198, 729, 949, 1035, 1109, 1943.
What did they seek? 790.
How did this literature work its way into French literature? 1628.
What personages of mythology seem to be of Celtic origin? 646, 1129, 1142, 1294, 1559.
Where was Camelot? 314. What was Excalibur? 640.
Who really made the British legends a part of English literature? 1152.
What English poets in modern times wrote about these myths? 1265, 1796, 1856, 1891.
What German wrote musical dramas about Celtic heroes? 1109, 2033.
Who has most nobly and successfully written about them? 1891.
What great poems did he write? 913.

ENGLISH.

When did English literature begin? 201, 618, 190, 302, 47.
Was it written in English? 618.
If not, in what language? 1088.
Who was the first English poet? 201, 302.
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Who wrote *Star Spangled Banner?* 1000, 1813.
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Who has been called the singing flower of beauty? 806.
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At what age did Mendelssohn begin the study of music? 1202.
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Where was Mozart born? 1274.
Who wrote *America?* 1770.
Who was the great genius of the fifteenth century, and also painted the celebrated picture of The Last Supper? 1056.

What great singer was admitted into the musical conservatories of Stockholm at the age of nine years? 1075.
What singer of renown born in Naples gave instructions in singing to Queen Victoria? 1015.
At what place is the famous miracle play produced every ten years? 1368.
How did Adolph Sax greatly influence military music throughout the world? 1686.
How did Ole Bull lose his large fortune? 287.
What drama did Carlyle call the greatest dramatic work of the eighteenth century? 1689.
What musical instrument is regarded as the ancestor of the piano? 559.
Who was the greatest Italian composer? 1411.
What was the earliest opera, and who was its founder? 1385.
Where did melodrama originate? 1385.
Who is the most famous modern Italian composer? 1385.
When was oratorio first introduced? 1390.
What great tragic actress was queen of the English stage during her time? 1752.
Who holds the first place in London among living actresses? 1893.
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What are the primary units of thought in music? 696.
What Germans put Germany at the head of the world in music? 153, 194, 834, 852, 1202.
What is a saxhorn and why is it especially fitted for military music? 1685.
Name the three chief classes of opera? 1385.
Who are the five great living women singers? 728, 1355, 1429, 1200, 1705.
What famous singer is called the Queen of Song? 1429.
Who is John Philip Sousa? 1783.
Who was the musical director at the Columbian Exposition? 1905.
What is musical notation? 1288.
Is there a difference between miracle plays and passion plays? 1238.
Who is considered the most eminent of living German musicians? 1837.
What was Wagner's last and greatest opera? 2033.
What is known in music as pitch-representation? 1290.
Give the name of the greatest dramatist next to Shakespeare? 550.
At what early age did Adelina Patti make her first appearance? 1429.
What great living American singer has sung leading parts in 40 operas? 1355.
Who is the greatest living actress and how else gifted? 206.

What modern English actor was knighted in 1895? 943.
What famous musician composed but one opera? 1385.
At what age did Beethoven first show evidences of his genius? 194.

MYTHOLOGY

What goddess is made famous by Swinburne in poetic form? 129.
What goddess is sometimes represented emerging from a golden palace and entering her chariot? 140.
What cruel treatment did Œdipus receive from his father? 1372.
What god became the wisest of gods by drinking from Mimr's fountain? 1472.
What goddess is the muse of history? 1284.
What is said of the muses? 1284.
What hero of the Trojan War slew Antilochus in single combat? 1200-1.
Who is called the early Roman god of war? 1176.
What month was named in honor of Mars? 1176.
How is Morpheus represented? 1264.
What goddess is the muse of comedy? 1284.
What god is forever excluded from paradise? 1452.
What hero won a kingdom by answering a riddle? 1372.
What goddess is the muse of tragedy? 1284.
How did Ulysses escape from the cannibal Polyphemus? 1522.
How did Vertumnus succeed in winning Pomona? 1522.
What goddess is the muse of choral dance and song? 1284.
What god held as sacred the wolf and woodpecker? 1176.
Who is called the Greek sea god? 1320.
Who are called the companions of Apollo? 1284.
What does the word Saturnalia mean? 1683.
What goddess is the muse of hymns? 1284.
How was a vestal virgin treated if she violated her vow? 2017.
What goddess did Apollo teach the secret of prophecy, and because she rejected his love he laid a curse on her? 346.
Who were the Danaides? 500.
Who was Jason? 965.
What divinities are used as denoting the worship of ancestors, the home altar and the hearth? 1031.
What was the hall, where were gathered the dead who had fallen in battle, called? 2035.
What goddess was identified as a personified woman? 983.
Who was the greatest of Egyptian gods? 1396.
What were the Olympic games? 1381.
By what other name was Zeus known? 1682.
Who is the god of the earth in Egyptian mythology? 1396.
Who is the goddess of heaven in Egyptian mythology? 1396.
Who was called the god of heaven? 1899.
What god was called the ruler of earth and heaven in Scandinavian mythology? 1372.
Who was the god of love? 484.
What goddess was spoken of as the twin sister to Apollo? 527.
What goddess was left to die on a hill by her father at her birth because he wished for a son? 129.
What goddess changed Tithonus into a cricket? 140.
What king's son was abandoned by his father and found by a herdsman and raised as his own son? 1372.
What goddess is the muse of lyric poetry? 1284.
How were Neptune and Poseidon represented? 1320.
How was Orpheus killed? 1395.
Who was the goddess of dawn? 1232.
Who was the goddess of the muse of poetry or passion? 1284.
Who was Uranus? 1991.
From what Greek god does our word tantalize come? 1870.
What is said of Saturn in later life? 1682.

What goddess was the muse of astronomy? 1284.
Who were the vestal virgins and how long were they held in service? 2017.
What god ruled the winds, seasons and agriculture? 1906.
Who was Psyche? 1556.
What are the Pleiades? 1504.
When was the festival of Flora held? 683.
What goddess was supposed to have power of restoring the aged to youth? 857.
What goddess when she died was believed to have passed into the star Sirius? 945.
What Roman god was it whose temple was open in time of war and closed in time of peace? 960.
What god is the type of manly strength and manly endurance? 867.
Whose name was changed to Aquarius, and what does it mean? 736.
What river did the Hindoos believe to bathe in her waters will wash away sin; to die and be buried on her banks secures free entry to eternal bliss? 736.
What nymphs in Greek myth are goddesses of trees and woods? 555.
What god made wings for himself and son to escape from imprisonment? 495.
Who was Quirinus? 1631.
What god cut up his brother's body in pieces and scattered them far and wide? 945.
How did Deucalion and Pyrrha repeople the world after the flood? 524.
How did Pythia always appear and what was her office? 518.
What goddess was the daughter of Hyperion? 140.
What god had a banquet for his people every day? 2035.
What goddess was the wife of Saturn? 1682.
Who was called the god of wine? 153.
What heroine was called the swiftest of mortals? 129.
For what crime was Atlas condemned by Zeus to a very great burden? 133.
What is said of Ixion? 951.
Who was called the goddess of the morning? 140.
Who was called the daughter of Atlas? 311.
What famous god was the son of Venus? 487.
Who was the goddess of the moon, and of the flocks and the chase? 527.
Whom did Pindar consider A Sister of the Fates? 700.
What goddess did the Romans claim? 700.
Who was Helen of Troy, and who made her famous by verse? 858.
Who was the goddess of womanhood? 983.
What god was said to be the father of the Roman race? 1176.
What god was called the god of dreams and son of sleep? 1264.
Who was the Roman god of the sea? 1320.
Whose music rocked monsters to sleep and stopped falling cliffs? 1395.
What was a peri? 1452.
What god had only one eye in the center of his forehead? 1522.
What is a sphinx? 1797.
What god was stricken with a fearful thirst and had all things around him to quench thirst, but could not get at them? 1870.
What god devoured all his children at their birth except the last one? 1682.
Who was the Roman goddess of fruits and flowers? 1524.
What nymph did Zeus employ to keep the attention of his wife Hera by talking to her? 579.
Who was the goddess Circe? 400.
Who was Juggernaut? 981.
What is said in Greek mythology about the flood and the ark? 524.
Who was called the goddess mother, the mistress of heaven, the eye of the sun and the queen of the gods? 945.
What is the symbol of the lotus? 1116.

How many times was the gateway of Janus closed in seven hundred years, and what kept it open? 960.
What is the ganga and what does it symbolize? 736.
What god personified the beginning of the arts of sculpture and architecture? 495.
What are dwarfs? 565.
What twin sisters while asleep were touched on the ears by two snakes and purified, so that they could understand the language of birds and thus know the future? 346.
What goddesses were condemned to pour water into sieves in the vain endeavor to fill them, and why condemned? 500.
Who dedicated his oxen and cart to Jupiter and tied the yoke with a hard knot? 781.
What goddess changed men and women into animals with her drugs and charms? 400.
What god avenged Osiris' death? 1396.
Who was Orestes? 1392.
How was Orion killed? 1394.
Who was Hebe? 857.
What are the mermaids? 1208.
Who is the goddess of wisdom? 1232.
Who is Pluto and what is his surname? 1507.
What god was suckled by a she wolf and afterwards brought up by the shepherd Faustulus and his wife? 1631.
Who was the greatest of Grecian deities? 2131.
How can nature worship be traced? 913.
What did the Greeks hold to be ministers of the vengeance of the gods? 842.
What did Hero do against her nymph Echo? 579.
What Roman goddess protects agriculture and the fruits of the earth? 360.
What goddess was Odin's queen? 1372.
How does Homer picture the Centaurs? 359.
What did the goddess Circe do for Ulysses? 400.
Who was the Greek hero of the flood? 524.
What goddess succeeded Hebe as cupbearer to the gods? 736, 857.
How was Isis discovered when she was grieving over the loss of Osiris, her husband? 945.
What are called the twelve labors of Hercules? 867.
What is a vampire? 2001.
What goddess was turned into stone on Mt. Sipylus? 1352.
What three sister goddesses had only one eye among them, and what were they called? 1198.
Who were the Gorgons? 783.
Who was Scylla? 1712.
Who was called the god of thunder? 1906.
Who was the goddess of fire? 2017.
From what god does Thursday get its name? 1906.
What are called Lamias? 2001.
What was Themis the goddess of? 1899.
Who were the father and the mother of Themis? 1899.
Who was Charybdis? 1712.
What god was called Old Man of the Sea? 1553.
What presumptuous youth almost set the earth on fire? 1464.
What famous god was worshiped in Athens by offerings of cows, goats, lambs, milk, honey and wine? 1415.
From what god does Wednesday derive its name? 1372.
What god with his two sons was killed by two serpents that rose from the sea and for what reason? 1029.
What goddess detained Ulysses on her island for seven years and died with grief when he departed? 311-12.
What god never grew weary, and why? 1906.
What goddess was the muse of epic poetry? 1284.
What does the story of Psyche represent to critics? 1556.

Who are called the Seven Stars? 1504.
What god became mad when he realized he had killed his mother? 1393.
Who were the Sirens? 1762.
How was Minerva represented? 1232.
What is said of Pelops? Whose child was he? 1443.
What goddess held sacred the olive branch, the serpent and owl? 1232.
Who was Orion? 1394.
Who was god of the under world, the realm of darkness and ghostly shades? 1507.
What is said of the Titans; who were they? 1916.
What Grecian deity was called the Father of gods and men, protector of kings and supporter of law and order etc? 2131
What was supposed to be the stream of oblivion in the lower world? 1058.
What divinities in Scandinavian mythology personified various elements of evil? 980.
What is an idol? 913.
What did savages use as their idols? 913.
How did Homer make mention of the Harpies? 842.

NATURE STUDY

What is a fine starting point for school work? 1307.
To what do parents pay too little regard in the first five years of a child's life? 1307.
What does nature study include? 1308.
What is the best way to start off with nature study? 1309.
How has the camera helped nature study? 1309.

DOMESTIC ANIMALS.

What is the value of house-pets? 889.
What are the most effective watchdogs? 889.
What are valuable outside watchdogs? 889.
What dog protects poultry from skunks and weasels? 889.
What is a dog's toothbrush? 889.
What makes a dog smell "doggy"? 889.
What will kill fleas on a dog? 889.
What is a cat's medicine? 889.
How many song birds does a cat kill in a year? 889.
What prevents cats from killing mice? 889.
What causes canaries to become diseased? 890.
What is the best seed for canaries? 890.
What causes loss of voice in canaries? 890.
What is the color of the wild canary? 321.
What will red pepper and sponge cake do to wild canaries? 321.
What are the most choice of all canaries? 322.
Why are rabbits and guinea pigs popular? 890.
How often do rabbits breed? 890.
How should rabbits be handled? 890.
How should guinea pigs be treated? 890.
What makes pigeons attractive? 890.
What are the best quarters for pigeons? 890.
Why must each family have a separate home? 890.
How may pigeons be tamed? 890.
How many squabs a year will a pair of pigeons raise? 890.
What was the first animal domesticated by man? 538.
How may dogs become civilized? 539.
What are the chief races of dogs? 539.
What is one of the best sheep dogs? 539.
What dogs are expert swimmers? 539.
How did Robert Bruce escape from bloodhounds? 539.
What is the Great Dane? 539.
What is the common badger-dog? 539.
What hounds have almost lost the power of scent? 539.

What is the most brutal of the dogs? 539.
What is one of the oldest dogs in Great Britain? 539.
In what country is a dog the poor man's horse? 539.
What dog is an irredeemable thief of food? 539.
What are the members of the cat family? 347.
What is the American wild cat called? 348.
What are the best known domestic cats? 348.
What kind of a cat has no tail? 348.
What was said of the black cat in the Middle Ages? 348.
What is the difference between a rabbit and a hare? 1577.
Where were 25,000,000 rabbits killed in a year? 1577.
What is the origin of the name hare-lip? 837.
What are the natural enemies of rabbits and hares? 837.
What immense injury results from the absence of natural enemies? 837.
What curious mistake is made about guinea pigs? 812.
What is the turtle dove? 1489.
How did Darwin use pigeons? 1490.
Is the carrier pigeon the one that carries messages? 1490, 341.
Are doves distinct from pigeons? 1490.

BIRDS.

How can bird houses be made cat proof? 1321.
How are birds unlike all other animals? 217.
Did birds ever have teeth? 217.
How many kinds of birds are there in the world? 217.
What is the best way to observe birds? 217.
Name some of the water birds? 217.
To what class do most of the song birds belong? 217.
What kind of a bird is a common chicken? 217.
What are the running birds? 217.
How do the mining birds build their nests? 217.
What bird lays its eggs on the bare ground? 217.
What are the mound building birds? 217.
What bird builds its nest like a baker's oven? 217.
How does the carpenter bird build its nest? 217.
What bird is locked up in its nest while hatching? 218.
What are summer and winter birds of passage? 218.
What man first saw birds of paradise in their native homes? 218.
Does the male or the female have the beautiful feathers? 218.
How many kinds of birds of paradise are there? 218.
What birds are never seen in flocks? 687.
What birds catch insects on the wing? 687.
What bird is unjustly accused of killing many honey bees? 1004.
What bird sings *pewit-phoebe?* 1473.
What bird has a dreamy note of *pee-a-wee?* 1463.
Where does the horned lark live? 1031.
What member of the blackbird family is called a lark? 1194.
Where do 40,000 crows assemble at one time? 482.
What birds does the jay imitate? 966.
Where is the red-winged blackbird found? 222.
What bird is called a locust bird and the ax-bird? 1813.
Are the orioles of the U. S. the same as those of Europe? 1394.
What bird is shot for the table as reed birds? 232.
Where is this bird called the rice bird? 232.
What is the "gladdest bird that sings"? 233.
What bird rides on a cow's back? 469.
What bird has three broods a year? 1791.
What is the American representative of the European kestrel? 1792.
What is the bluest bird that flies in North America? 923.
What bird is called the thistle bird and yellow bird? 778.
What bird feeds largely upon rice? 807.
What is the typical bird of the air? 1852.
What bird protects the negro's chicken yard? 1179.
What bird is called a swallow, but is more closely related to the humming bird? 1855.
How does the catbird sing? 349.

What is the most common bird of the South? 1244.
What bird makes a sound like the squeak of a hurt chicken? 1245.
What bird uses its tail in climbing? 476.
What bird can walk on a limb head downward? 1365.
What bird says: "Yank! Yank! Hank! Hank!"? 1366.
How many broods do the bluebirds raise a summer? 231.
What bird devours the eggs and young of other birds? 231.
Is the robin in America the same as in England? 1620.
Where does the robin-redbreast live? 1505.
Can the humming bird be tamed? 898.
Why is the shrike called the butcher bird? 1748.
What birds are included among poultry? 1540.
Why are fowls allowed in the vineyards of France? 1541.
What are the members of the duck family? 557.
What was the parent of our common domestic duck? 557.
Where does she get the down to line her nest? 557.
What duck is called the greenhead? 1152.
What is the difference between the redhead and canvasback? 328.
What is the favorite food of the canvasback? 328.
Where does the duckbill live? 557.
Why is the turkey buzzard protected by law in the South? 297.
What bird robs the osprey? 678.
What bird can put a whole fish in its mouth? 1442.
What bird do the Chinese train for fishing? 456.
What bird can fly 150 miles an hour? 647.
What is a noble hawk? 647.
How did the sandpiper get its name? 1647.
How many kinds of snipe visit the U. S.? 1773.
Where is that famous war eagle *Old Abe*? 572.
Which of the owls should be protected? 1403.
What owl steals all kinds of poultry? 1404.
What bird is called the raincrow? 485.
What birds were supposed to breed in the halcyon days? 1004.
How fast can an ostrich run? 1398.
How many pounds of feathers are taken from an ostrich? 1398.
How big is an ostrich egg? 1398.
How much is a pair of ostriches worth? 1398.
What is the best food for an ostrich? 1398.
What large bird carries a helmet on its head? 347.
What bird is also called the loon? 536.
What birds have been killed in immense numbers to trim ladies' hats? 814.
What birds are called sea swallows? 814.
What is one of the handsomest of all birds? 1853.
What birds do the Esquimaux use for clothing? 138.
What bird never gets plump, no matter how much it eats? 868.
What wonderfully beautiful bird has been a victim of woman's vanity? 869.
What was the sacred ibis? 908.
What is a bird of good omen? 1833.
How long is the windpipe of the whooping crane? 473.
What bird can swallow a kitten? 14.
How do the toes of the coot differ from those of the rail? 1581.
What is the proper name of the mudhen and crowduck? 451.
What has happened to the golden plover? 1505.
What is the best talking parrot? 1426.
What parrots make the best pets? 1425.
What is the cockatoo? 417.
What parrot in New Zealand will kill a sheep? 1425.
What two different birds are called partridges in the North and the South? 1426.
What is the most common June bird in California? 1426.
What bird is called pheasant in the South? 807.
What bird puts on "snow shoes" in the winter? 807.
What bird is the prairie chicken? 808.
What bird is called the fool hen? 808.

What is the family name of the wild turkey? 1465.
What bird seems to walk in the water? 1462.
What birds do sailors call Mother Cary's chickens? 1462.
What bird can outswim fish? 1444.
What large bird eats snakes? 1716.
How do the weaver birds protect their nests from snakes? 2061.
What is the largest of all song birds? 1128.
How was the lodo exterminated? 538.
What bird can fly 1,000 miles in 24 hours? 388.
What bird calls "teacher, teacher, teacher"? 1402.
What immense loss did Audubon suffer by rats? 136.
What splendid work is being done by the Audubon societies? 136.
What is the Pelican Island? 136.
When did the use of wild birds' plumage stop? 136.
How much was bird life reduced from 1888 to 1903? 136.
What government officer has a salary of $1.00 per month? 136.

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How many legs has an insect? 928.
Is a spider an insect? 928.
How do insects breathe? 928.
How is an insect bottle made? 928.
How should insects be mounted? 928.
How are fields of grain protected from them? 109.
What insects look like flaxseeds? 870.
What is the 17-year locust? 397.
Where does the 13-year locust live? 397.
What are the dogday harvest flies? 398.
What are the locusts of the Bible? 796.
How do crickets make that chirping sound? 477.
Can you tell a katydid from a grasshopper? 993.
When do cockroaches come out to feast? 418.
What animal is both a worm and an insect? 1453.
What is a bee doing when it runs around over a flower? 191.
What kind of bees make the most honey? 192.
Do bees help the fruit raiser? 192.
What does the queen bumblebee do in winter? 192.
What insect makes its nest of paper? 2050.
What insects are fed by a nurse? 76.
What insect has a home sometimes 12 ft. high? 77.
What insect digs a pit for others to fall into and then eats them? 81.
What insect shoots a strong liquid at its enemies? 194.
What is a good protection against fleas? 682.
Are the fly and the apple worm relatives? 687.
Does the common house fly bite? 687.
Is it the male or female mosquito that stings? 1269.
Why is the tomato worm called the jughandle? 350.
Are caterpillars worms? 349.
Do the moths fly by day or by night? 296.
What butterfly comes from the cabbage worm? 297.
Where does the electric light bug live? 600.
Can the darning-needle or dragon-fly hurt a person? 548.

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How are codfish caught? 419.
How can you tell a haddock from a codfish? 821.
What fish is called the pumpkin seed? 1849.
What is one of the finest game fish in the world? 179.
What fishes prepare nests to hatch their eggs in? 1827, 179.
Does the wall-eyed pike belong to the pike family? 1451.
Is there any difference between pickerel and pike? 1490.
What is the muskallunge? 1490.
How is the trout related to the salmon? 1945.
What fish can leap 6 or 8 feet out of the water? 1666.
How are mackerel caught? 1138.
From what fish do we get isinglass? 1842.

What fish is called Albany beef? 1841.
Is the sea dogfish the same as the fresh water dogfish? 540.
What different names has the mudfish? 1274.
From what fishes does shagreen come? 1732.
What fish skin was formerly used as sandpaper? 1735.
How long is the man-eating shark? 1734.
What are mermaid-purses? 678.
Describe the stickleback's nest? 1827.
What is the largest family of fishes? 339.
Where are the blind fishes found? 228.
What is the color of the original goldfish? 778.
When did fish hatching begin in the U. S.? 677.
What was the first fish to be protected? 1731, 677.
How is the whitefish related to the fresh water herring? 869.
Where do herrings come down in showers? 1748.
How are fish eggs artificially fertilized? 677.

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Did the Romans eat oysters? 1406.
What is commonly served in shrimp salad? 1748.
How does the lobster swim backward? 1105.
Why is the shell of a dead clam always open? 403.
What is a decapod, or ten-footed animal? 471.
What animal introduces us to zoölogy? 474.
What animal lays eggs? 557.
What kind of a crab eats birds and rabbits? 472.
What is a mammal? 1154.
Is the starfish an animal or a fish? 1812.
What wonderful power do starfish possess? 1812.
What is Aristotle's lantern? 578.
How does the ink of the cuttlefish protect it? 491.
What other native of the sea makes an inky fluid? 1713.
How does the squid swim backward? 1806, 491.
Will the devilfish attack man? 1371.
What is trepang? 1713.
What sea creature lived in captivity from 1828 to 1887? 1713.
What is the sand dollar? 1673.
What animal is only one-half inch long when born? 1387.
Is the "coon" related to the bear? 1577.
Can a kangaroo climb a tree? 988.
What animal is covered with a coat of armor? 104.
How does the anteater catch insects? 77.
What food is recommended for white mice? 1273.
Is a dormouse the same as a white mouse? 545.
What rat is like a little kangaroo? 1588.
Where did rats come from? 1588.
What is the shape of a muskrat's tail? 1291.
How long can a beaver remain under water? 188.
How do the beavers cut down a tree? 188.
Describe the beaver's houses? 188.
What trick does the badger play to protect himself? 156.
How does the hedgehog differ from the porcupine? 857.
Can porcupines shoot their quills? 1529.
What little field animal has no neck? 1247.
Why is the bat a "night policeman"? 180.
Are bats blind? 180.
Are bats gentle and friendly? 180.
What is probably the largest animal that ever lived? 2073.
Does the whale really spout water? 2073.
Is the dolphin a fish? 541.
What is done with the skin of the porpoise? 1529.
How big is the sea cow? 1155.
How much do elephants' tusks sell for? 604.
What extinct animal furnishes ivory? 1155.
How many toes has a horse? 886.
What horses came from Arabian stock? 886.

What was the trotting record in 1818? 886.
How do the stripes of the zebra and quagga differ? 1570.
What is asses' milk valuable for? 122.
What is a boar, a sow, a pig, a shoat? 1856.
What is a valuable English hog? 1857.
What are the bristles of the wild boar used for? 232.
How does the Bactrian camel differ from the dromedary? 314.
What are the humps of the camel used for? 314.
How many days can they go without drinking? 314.
Are there any wild camels in the U. S.? 314.
Where does alpaca come from? 54.
What animal will lie down and refuse to move when overloaded? 1105.
How do the horns of the deer differ from those of the antelope and oxen? 513.
What is the fleetest four-footed animal? 78.
What is a stag? 514.
How high were the antlers of the Irish elk? 514.
What is the eland? 78.
What is *shammy* skin? 365.
What is the name of the American elk? 514.
How long does it take an elk or deer to grow a pair of antlers? 608, 513.
What animal fills the place of the horse, cow, goat and sheep? 1600.
What is the caribou? 514.
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What ox-like animal refuses to eat corn? 2119.
What savages make shields of buffalo hide? 285.
What is the American buffalo? 285.
How many buffaloes in the U. S. and Canada now? 220.
How did the buffalo get relief from insects? 220.
What is the name of the "horned horse"? 775.
Where do mohair and cashmere come from? 776.
What is the ibex? 908.
What animal is like both an ox and a sheep? 1291.
What bear marks a "keep off" sign on a tree in his hunting ground? 186.
What bear grows as large as an ox? 186.
What animal has a great sense of humor? 185.
What animal enjoys coasting in winter? 1400.
What is the value of a sea otter's skin? 1401.
Does the weasel visit hen yards? 2060.
Is the polecat the same as the skunk? 1764, 1516.
What was the skin of the ermine formerly used for? 625.
What little animal is a famous nest robber? 1235.
Where does Alaska sable come from? 1765.
What is the value of the silver fox skin? 703.
What is the laughing hyena? 905.
What is the American wild cat's right name? 348.
What terrifying animal is really a coward? 1127.
What is the lion's only enemy? 1078.
Can a tiger defeat a lion in combat? 1911.
What animal is called catamount, American panther and American lion? 1560.
Are panthers different from leopards? 1056, 1417.
What is the tiger of the New World? 955.
Are there any wolves in South America? 2103.
What is the jackal? 952.
How is the walrus known? 2038.
Does sealskin fur come from the seal or the sea lion? 1714.
How do the hind legs of a seal differ from those of a sea lion? 1714.
What animal's name means a ghost? 1053.
What are the howling monkeys? 1252.
What is the name of the smallest monkeys? 1252.
What is the chimpanzee? 388.
What ape can travel six miles an hour among the tree branches? 1389.
Are there many gorillas in captivity? 783.
What is the largest and fiercest of the baboons? 152.

TREES.

Where do trees grow to be 500 ft. high? 1940.
From what tree is the word "book" derived? 192.
What tree is believed never to be struck by lightning? 193.
What is one of our most valued timber-trees? 1367.
What is the character of red oakwood? 1367.
Which of the oaks is a valued ornamental tree? 1367.
Which is the strongest of oak trees? 1367.
What oak wood is used in cooperage? 1367.
What oak has evergreen leaves, and is used in shipbuilding? 1367.
How many pounds of sugar will a maple tree yield? 1166.
What is bird's-eye maple? 1166.
What is one of the first trees to bloom in the spring? 1167.
How is boxelder related to maples? 1166.
What is black ash used for? 118.
To what family does the elder tree belong? 594.
Why is the white elm famous in history? 609.
Is the pecan a hickory nut? 872.
Does white poplar come from the poplar tree? 1528.
What is the aspen tree? 1528.
What is the sweet bay tree? 1147.
What tree produces turpentine, rosin and tar? 1492.
What tree prevents the banks of streams from being worn away? 2090.
What chestnut tree produces only one nut? 379.
What wood is used in making artificial limbs? 282.
What is the horse chestnut? 887.
What wood was used for Egyptian mummy cases? 1858.
When are butternuts used for pickles? 297.
What is the plane tree mentioned in the Bible? 1858.
What tree does red cedar come from? 354.
What tree is the white cedar? 492.
What is the cedar of Lebanon? 354.
What is the enemy of the locust tree? 1107.
What are the gum trees? 631.
What leaves does the German maid use on her wedding day? 1294.
What wood is used for tool handles? 541.
What is the national flower of Flanders? 149.
How does hemlock compare with pine wood? 860.
What is spruce-beer made from? 675.
What is Mexican honey water? 26.
What plant is called by mistake century plant? 25.
On what tree does the cocoanut grow? 1412.
What tree produces sago? 1412.
Where does vegetable ivory come from? 950, 1412.
What is a common food article of the Arabs? 505.
Where are Smyrna figs grown? 660.
Describe the pomegranate fruit. 1523.
Where are olives grown? 1379.
How many bunches does a banana plant produce? 165.
How is lemon extract obtained? 1052.
Where is citron grown? 402.
Why is the apple called the king of fruits? 85.
To what family of plants does the apple belong? 85.
What is the greatest apple country in the world? 85.
Where does the apple thrive best? 85.
For what is the common apple tree rightly valued? 85.
Of what country is the peach a native? 1434.
What fruits are related to the peach? 1434.
What is the nectarine? 1434.
How are peaches trained in England? 1434.
In what months should peach trees be gone over? 1434.
What two fruits are related to the pear? 1435.
What place does the pear hold among orchard fruits? 1435.
What is a pome? 1523.
What plum is splashed with spots of red? 1506.

What kind of cherries are cultivated for canning? 377.
What is cherry blossom time in Japan? 377.
What is the choke cherry? 377.
What cherry tree is valuable for timber? 377.
What are prunes? 1555.

FRUITS AND PLANTS.

How many species of grapes are there? 794.
How many kinds of wild grapes are found in the U. S.? 794.
What are the two principal products of grapes? 794.
To what family does the grape fruit belong? 795.
What is the pomelo and shaddock? 795.
How does the blackberry differ from the raspberry? 222.
What is the parent of the black raspberries? 1587.
What black raspberries have purple flowers one and two inches in diameter? 1588.
How are dewberries related to raspberries? 1588.
What must house plants contend with? 890.
Why is the kitchen a good place for plants? 890.
When should plants be potted? 890.
What is the best soil for most house plants? 890.
What plants grow best in north windows? 890.
What are the easiest plants to manage? 891.
What is the most popular foliage plant? 891.
What is the best time to plant hyacinths? 891.
What is the most popular of flowers? 1633.
What does horticulture include? 887.
What is the general rule for pruning? 1555.
What are dry fruits and fleshy fruits? 721.
What city ships 5,000 carloads of raisins every year? 309.

PHILOSOPHY

What is called the mother of sciences? 1471-2.
What is the aim which philosophy always has in view? 1472.
With whom is the history of philosopy said to commence? 1472 .
Into what three periods is the history of philosophy divided? 1472.
What names mark the three periods of ancient philosophy? 1472.
What is mediæval philosophy? 1472.
Who are the founders of modern philosophy? 1472.
Who was the greatest of all Greek pilosophers? 97.
What philosopher taught that pleasure is the chief good? 621.
What philosopher, condemned to death, spent his last day discoursing on immortality? 1777.
What philosopher left no written accounts of his teachings? 1777.
What are the distinctive principles of the teaching of Socrates? 1502.
What is Plato's theory of knowledge? 1503.
What is education, according to Plato? 1503.
What was Plato's highest idea in his view of philosophy? 1503.
What are the four cardinal virtues? 1503.
Who was the founder of the Italic school of philosophy? 1567.
Who first assumed the title "philosopher"? 1567.

PHYSICS

What does the science of physics deal with? 1481.
What properties of matter are excluded in a narrow sense? 1482.
When do we know a truth scientifically? 1706.
What are the only two things in nature that have an objective existence? 692.
What is the *moment of force* of a body? 692.
How is the word force much abused in popular usage? 693.
What is the study of *applied sciences?* 1482.
What are the different branches of engineering? 614.
What qualities are necessary for success in engineering? 615.

DYNAMICS.

What is the aim of the science of dynamics? 566.
What is required in order to locate a particle? 566.
What do we use to describe the change of position of bodies? 566.
How is the velocity of a particle defined? 566.
How is the unit of time measured? 1913.
What is acceleration? 566.
What is the science of motion called? 566.
What is meant by *mass?* 566.
What is the distinction between *mass* and *weight?* 1184.
What is meant by *inertia?* 566.
How is inertia measured? 925.
What are the three fundamental concepts of dynamics? 566.
What experimental facts are at the foundation of dynamics? 566.
What is the linear momentum of a body? 566.
What is force? 566.
What is the distinction between kinetics and statics? 1814.
What is meant by graphical statics? 1814.
What are Newton's laws of motion? 566.
What is the conservation of matter as stated by Lavoisier? 567.
What are *work* and *energy?* 567.
What is the unit of power? 1541.
What is the principle of the conservation of energy? 567.
What simple method is used to treat rotation and translation? 567.
What are the two groups of energy? 567.
What is the definition of potential? 1537.
Does the potential energy of any system tend to increase or to decrease? 567.
What is elasticity? 593.
What is meant by *stress* and *strain?* 594.
Why is perpetual motion impossible? 1454.
How is density defined? 521.
What is specific gravity? 521.
What is the hydrometer? 903.
What is the science of hydraulics? 903.
Under what pressure do hydraulic engines work? 903.
How is the possible work of a water-wheel determined? 2053.
What two kinds of water-wheels are used today? 2054.
Where are the most powerful turbines ever built? 2054.
What is the available water power of the United States? 2054.
What horse power is developed at Niagara Falls? 1346.
What two systems of waterworks are now in use? 2055.
What is the daily consumption of water per person in American cities? 2055.
How many times greater is this than the consumption of European cities? 2055.
What is the temperature of boiling water? 1815, 237.
Do pressure and temperature increase equally in a closed boiler? 1815.
What are the two general types of boilers? 236.
What is the Babcock and Wilcox boiler? 237.
How is the horse-power of a boiler stated? 237.
What percentage of carbon does coal contain? 413.
What power was used to work the first piston engine? 1815.
What lazy boy is said to have invented the valve gear? 1815.
How did James Watt improve the steam engine? 1815.
What is Watt's engine-governor? 788.
What governor is used on modern high speed engines? 788.
What variation in speed is allowed for electric light engines? 788.
What is an indicator? 922.
What information is given by indicator cards? 922.
What is the difference between indicated horse-power and brake horse-power? 923.
What is a prony brake? 570.
What is meant by one horse-power? 569.
Upon what does the efficiency of a steam engine depend? 1816.

How does a condensing engine differ from a non-condensing engine? 1817.
How does the Parson's turbine engine differ from De Laval's? 1953.
Which of them makes 15,000 revolutions per minute? 1953.
In what two ways only may the efficiency of a turbine engine be increased? 1953.
Who invented the link motion used on locomotives? 1817.
What locomotive showed a speed of 30 miles an hour in 1829? 1817.
What is the steam-hammer? 1818.
When and by whom was the screw propeller introduced? 1818.
Who made a successful experimental boat in 1801 using a screw propeller? 1711.
What ocean steamship uses 570 tons of coal per day? 1819.
What study treats of the properties of gases? 1508.
How was the first gas engine operated? 739.
How does the gas engine compare with the steam engine in efficiency? 740.
What gas motor has given the highest efficiency of any form of heat engine? 740.
What is the pressure of the atmosphere? 33.
What is the height of the atmosphere? 34.
Who showed that "nature abhors a vacuum *because* the air has weight"? 174.
What is the aneroid barometer? 174.
How does a force pump differ from a vacuum pump? 34.
What vacuum pump can reduce the pressure of a closed vessel to the one hundred millionth of an atmosphere? 35.
What degree of vacuum can be produced with an ordinary air pump? 1997.
At what temperature and what pressure will air become a liquid? 438.
What two fluids result from liquefied air? 1078.
What enormous pressure can liquid air exert during evaporation? 1079.
What is the manometer used for? 1161.
What fact is known as Boyle's law? 255.
What fact is described by the law of Charles? 370.

ACOUSTICS.

What subject is studied under acoustics? 8.
What two things are essential to the production of sound? 8.
How is the pitch of a string determined? 8.
What is the *frequency* of a note? 1495.
What evidence have we that sound is a wave motion in the air? 8.
What is a wave motion? 2058.
How did Newton use the echo to determine the speed of sound in air? 579.
How may two sounds produce silence? 8.
Does the pitch of a sound affect its speed? 8.
How fast does sound travel in air? 8.
How does sound help to determine the number of atoms in a molecule of gas? 8.
What is the manometer flame used for? 1162.
How does a "musical tone" differ from a "noise"? 8.
What determines the *loudness*, the *pitch* and the *quality* of a musical tone? 9.
What is a musical interval? 9.
When are two notes in unison? 9.
What is an octave? 9.
What is a remarkable fact about the ears of all western nations? 9.
What is the musical scale made up of? 9.

HEAT.

What are the two fundamental questions regarding a thermal condition? 854.
How does Maxwell define temperature? 855.
When are bodies said to have equal temperatures? 1886.
What are the essential features of a good thermometer? 1901.

What peculiar advantages has mercury for use in thermometers? 1901.
How do the Fahrenheit and Centigrade thermometers differ? 1901.
What other thermometer is also used? 1592.
What is a pyrometer? 1567.
Describe the two pyrometers now in use? 1567.
What are the only two methods known for the transfer of heat? 855.
Upon what four things does the flow of heat through a solid body depend? 855.
How does *convection* differ from *conduction?* 855.
What remarkable similarity exists between light and radiant heat? 855.
What is radiant energy? 1579.
How does heat differ from radiant energy? 1579.
What instrument detects the radiation from a candle two miles away from it? 1580.
What are the three most important effects of heat? 855.
What is the coëfficient of linear expansion? 855.
How much does the volume of a solid change when heated? 855.
What was the term caloric formerly used for? 311.
How do ice and water use up heat in melting and evaporating? 856.
How is the unit of heat defined? 856.
What is the *specific heat* of a substance? 856.
What is the *heat of fusion?* 856.
What is meant by the vapor-tension of any substance? 636.
What is sublimation? 636.
How may the boiling point be defined? 636.
What is distillation? 535.

LIGHT.

When does light travel in straight lines? 1067.
What is the phenomenon of reflection? 1067.
When is a ray of light said to be refracted? 1067.
What is the index of refraction? 1067.
Does light travel at the same rate of speed in all kinds of matter? 1068.
When are two rays of light said to "interfere"? 1068.
What did Newton prove regarding the composition of a ray of white light? 1068.
If a ray of light is passed through a crystal of Iceland spar, what is the result? 1065.
Why do we believe light to be a wave motion of the ether? 1068.

GRAVITATION.

What is gravitation? 796.
When and by whom was this law discovered? 796.
What are the three principal facts known concerning gravitation? 797.
What is the name given to the summary of these laws? 797.
What important inferences may be drawn from this law? 797.

ELASTICITY.

What is elasticity? 593.
When are forces said to be in equilibrium? 593.
What is the meaning of the terms "stress" and "strain"? 593.
How is the elasticity of length measured? 593.
How is the elasticity of volume computed? 594.
How is the elasticity of shape found? 594.
Which of these kinds of elasticity is employed in dividing bodies into solids and fluids? 594.
When are bodies said to be rigid? 594.

ELECTRICITY.

How did the word "electricity" originate? 596.
In 600 B. C. what facts were known concerning electricity? 596.
During the next two thousand years, was any advance made in the science? 596.
What is the science of electrostatics? 596.
What is the first law of electrostatics? 596.
What is a "conductor"? 596.
What is a "non-conductor"? 596.
What are the two kinds of electrification called? 596.

When do bodies attract and when do bodies repel each other? 596.
What was the fourth great discovery in electricity? 596.
What is the phenomenon of electrostatic induction? 597.
When is a wire said to have an electric current running through it? 597.
What is a galvanometer? 597.
What is a voltaic cell? 597.
What two features distinguish the storage cell from other voltaic cells? 597.
What is an induced current? 598.
What is a thermo-electric current? 598.
What is an ampere? 598.
What is an ohm? 598.
What is Ohm's law? 598-9.
What is a volt? 599.

MAGNETISM.

What remarkable property has a magnet? 1145.
What are the magnetic poles of a magnet? 1145.
What is the fundamental principle of the compass? 1145.
What is the magnetic declination? 1145.
What important discovery did Bianco note in regard to this? 1145-6.
What is the magnetic dip? 1146.
Who was the first profound student of magnetism? 1146.
What led him to believe that the earth is a magnet? 1146.
When iron is heated red hot what is the effect on its magnetism? 1146.
What is magnetic induction? 1146.
What sort of combination is called an electromagnet? 1146.
Of what important scientific instruments is this a fundamental part? 1146.

PHYSIOGRAPHY

How is the term "physiography" used in England? 1482.
How is the term used in America? 1482.
What is its meaning when considered as the correlative of meteorology and of oceanography? 1482-3.
How does it differ then from physical geography? 182.
How is it related to geology? 1483.
How does physiography come to include meteorology and oceanography? 1482.
What are the three classes of processes that work on the earth's surface? 1483.
What does diastrophism include? 1483.
What does vulcanism include? 1483.
What does gradation include? 1483.
Where are the centers of these three activities? 1483.
The transfer of material is usually between what levels? 1483.
What are the greatest features of the earth's crust — both elevations and depressions? 1483.
Is it known how these features originated? 1483.
What is the continental shelf? 1483.
What are some horizontal irregularities of the land? 1483.
Of the ocean? 1483.
In what different ways have these originated by diastrophism? 1483.
By gradation? 1484.
By vulcanism? 1484.
What are the three great relief types of land? 1484.
How do plateaus and plains differ from each other? 1484.
What is implied by the term mountain? 1484.
How did plains originate? 1484.
How have their surfaces been modified? 1484.
Of what are plateaus the result? 1484.
Have they been similarly modified? 1485.
What are the various ways in which mountains originated? 1485.
What of their modification? 1485.
How are valleys made, leaving hills? 1485.

What are buttes? 1485.
What are mesas? 1485.
What are alluvial and lacustrine plains? 1485.
When are slopes called cliffs? 1485.
When may basins give rise to lakes and ponds? 1485.
What areas of the sea bottom are comparable to certain areas of the land? 1485.
Are volcanic peaks notable features of the ocean bottom? 1485.
Why is it that the most notable secondary features of land surfaces are not found on the ocean bed? 1486.
What formations are built up by waves, currents and coral polyps? 1486.
What is the most mountainous country on the globe? 1857.
What boundary line runs through the center of the largest body of fresh water on the globe? 1850.
What produces the sand of the great Sahara desert? 1654.
What is the highest point on the earth? 636.
What is the greatest sea depth recorded? 1712.
At what depth of the sea is life most abundant? 1713.
How does the temperature of the waters of the sea vary? 1712.
What causes earthquakes? 574.
What earthquake was the most destructive ever known? 575.
How do earthquakes affect the surface of the earth? 575.
What is the highest volcano in the world? 464.
What volcano is nearest to the south pole? 623.
What two volcanoes have risen from a level plain within the memory of man? 951.
What are the highest mountains in the world? 119.
What is the highest tableland in the world? 119.
What is the highest mountain peak of the western hemisphere? 61.
What mountain system measures 1,000 miles at its greatest width? 1622.
What tableland is the second highest in the world? 1457.
What tableland is called the roof of the world? 1954.
What is the largest river in the world? 57.
What is the second largest river in the world? 442.
What river has waters that are inky black? 1616-7.
What country is noted for its underground rivers? 38.
What river has a natural wave five or six feet high? 1728.
What is the greatest canon in the world? 429.
What river has the largest lock in the world? 1218.
What hills form one of the most wonderful deposits of iron in the world? 939.
In what country can one find all degrees of temperature in a day's journey? 1214.
What is the largest continent of the globe? 119.
In what country does lumber never rot and meat never spoil? 1909.
What are the largest bodies of fresh water on the globe? 1022.
What is the most northerly large body of fresh water? 798.
What is the largest enclosed sea in the world? 1198.
What body of water contains eight times as much salt as the ocean? 510.
What lake is shaped like a cross with a crumpled foot? 1122.
What makes the navigation of Lake Erie difficult? 624.
What is the average depth of the Atlantic Ocean? 132.
What is the average depth of the Pacific Ocean? 1407.
In what inlet does the current run east on one side and west on the other? 1762.
What is the maelstrom? 1143.
What is the largest island in the world? 142.
What is the second largest island in the world? 1325.
What rocking stone is so well poised as to crack a walnut? 1622.
Where are the Pontine marshes? 1526.
Where is the Great Basin? 798.

What causes the Gulf Stream? 813.
What place has the largest rainfall in the world? 199.
Where is the heaviest rainfall in the United States? 1582.
What produces quicksand? 1574.
Where is the Ignis Fatuus seen? 915.
What causes geysers? 762.

RELIGION

When and where was the Red Cross Society organized? 1595.
To whom does the society of King's Daughters owe its origin? 826.
From what does the society of Ursulines take the name? 1992.
Who were the Knights of Malta? 1153.
What was the origin of Mormonism? 1263.
What was the League of Schmalkald? 1689.
When and where was the Y. M. C. A. organized? 2088, 2126.
What pope opened the Vatican archives for historical investigation? 1055.
Was Chautauqua founded to instruct Sunday school teachers? 374.
What is the theory of pessimism? 1458.
From whom did Mohammed claim descent? 945.
How long has Buddhism existed? 284.
What pope first undertook to introduce Christianity in England? 804.
What is the name of thirteen of the Roman Catholic popes? 1054.
To whom is the Catholic Church indebted for her ritual and chants? 804.
What are the duties of the pontiffs? 1526.
What noted cathedral was begun in 1270 and completed in 1880? 425.
When and by whom was the pope proclaimed infallible? 1527.
Of what island was the entire population Christianized in twenty years and under whose labors? 1429.
What sect will eat nothing cooked by a person of another religion? 1426.
What is serpent worship? 1725.
Who was the first apostle to baptize a Gentile convert? 1461.
What was the difference between Pharisees and Sadducees? 1464.
What religious sect invaded the British territory in India in 1845? 1756.
What theological seminary has sent forth three thousand ministers? 70.
Under what Roman emperor was Christianity established as the religion of the state? 1627.
Why is Polycarp's life especially important? 1521.
How many churches in London, England? 1110.
What city in South America contains over seventy sacred buildings? 1071.
Who was the first bishop of the M. E. Church ordained in America? 116.
Who first preached Methodism in America? 1683.
What sect claimed to have a revelation that Christ would soon appear in the form of a woman? 1732.
What famous preacher never received a college education? 1806.
Who first established the temporal sovereignty of the Holy See? 1450.
Whose influence caused the separation of the Latin and Greek churches? 1475.
What church is called the Mother and the Head of all the Churches of the city and of the world, in Rome? 1034.
In what kingdom are all the natives required to enter the priesthood for a time? 1749.
From what did the term Protestantism come? 1553.
What priest gave his life to work among the lepers? 499.
What saint was called John the Almoner, and was the greatest orator of the ancient church? 396.
What ended pagan religion in Sweden? 1854.
Who founded the modern system of Sunday schools? 1848.

What is meant by the Urim and Thummim? 1992.
Who was the successor of Henry Ward Beecher? 1.
Who was called the Father of the Faithful? 4.
Where and when was the name Christian first given to the disciples of Christ? 80-81.
What did Christianity do for Rome? 1627.
Who introduced Christianity into Scotland and when? 1708.
What title is given to the head of the Greek church? 1429.
From what did the Greek church arise? 1429.
Who were the Dominicans? 543.
Who were the Druids? 554.
When and by whom was the organization of Jesuits formed? 1122.
Who was the founder of the Shakers? 1045.
Who was the founder of the Protestant missions in China? 1266.
What president was instrumental in securing religious liberty to the people of Virginia? 1142.
Where did John Wesley first preach to the colonists? 1683.
When did the Saxons accept Christianity? 1686.
Who was the founder of the Karen mission? 232.
What led to the formation of the American Baptist Missionary Union? 981.
Who was the founder of the first Sunday school? 1848.
What was the beginning of the Swedenborg movement? 1855.
When and by whom was the Society of Quakers formed? 1570.
What led to the formation of the American Board of Missions? 981.
What is the first account of the Greek religion we have? 801.

TRADES AND MANUFACTURES

When was the linen mill first introduced in England? 1077.
Where and when was point lace first known? 1017.
Of what is macaroni made? 1129.
What is linseed oil made from? 1077.
How is indigo produced? 923.
From what are natural gas and petroleum said to be produced? 1306.
Where does port wine come from? 1534.
How is oleomargarine made? 1379.
What is the most important manufactory in Worcester, England? 2109.
How are bottles made? 773.
How is ice manufactured? 911.
How many white lead factories in the United States? 2079.
What is the first gold, lead and silver state? 428.
What is the extent of the sugar beet raising in France? 705.
What is celluloid, and when and where was it invented? 357.
What is the difference between chocolate and cocoa? 418.
When and where was the first rolling-mill established? 939.
What city is the world's greatest milling center? 685.
What class originated the making of whiskey and for what purpose? 2076.
When were shells first used as projectiles? 1738.
When and where was the first printing press used in the United States? 1549.
What staple product of South Carolina is considered the best in the market? 1784.
How early was wire drawing begun in the colonies? 1185.
What port is next to New York in its foreign trade? 249.
Which state stands foremost in manufactures? 1332.
What state yearly ships out about 10,000 carloads of peaches? 516.
What country produces nearly half the steel of the world? 1820.
How many barrels of beer are made yearly by the Pabst Brewery of Milwaukee? 1229.
How many laborers in this country is it estimated there are whose yearly income does not exceed $475? 1015.
In what city are 20,000,000 steel pens made every week? 219.
Where are the largest starch factories in the world? 1812.

What country leads in the output of paper? 1417.
What is the principal silk-making country? 1757.
How long has beer been in use? 193.
When was coal first tried in furnaces, and when did it come into general use? 939.
Which is the greatest sugar-producing state in the Union? 1844.
How many square miles of coal fields in the United States? 414.
When and where was the first glass manufactured in the United States? 773.
Where is the largest factory of mathematical instruments in the United States? 1946.
Where was the first cotton factory in the United States established? 1432.
When was the first paper mill built in the United States? 1417.
Where is the largest leaf tobacco market in the world? 1120.
Where is the center of the largest manufacturing district in the world? 1156.
Where is the largest silver smelting works in the world? 1381.
What is vegetable parchment? 1420.
What is peat? 1436.
How is shot made? 1747.
Who was the greatest of all violin makers? 2022.
What country uses corn husks for cigarettes? 457.
Which is the oldest cotton-producing country? 464.
For what was India rubber first used? 920.
When did matches first come into general use, and how are they made? 1188.
How are pins made? 1493.
Where is the largest silver plate manufactory in the world? 1207.
How is felt made? 654.
Where is the largest and oldest watch factory in the world? 1185.
What city is the greatest railroad center in the world? 380.

ZOOLOGY

What is zoölogy? 2133.
Zoölogy comes into direct relation with what other scientific studies? 2133.
What is the better kind of knowledge that has replaced zoölogy of the past? 2133.
A generation ago, where was the emphasis placed? 1600.
Do fields, forests and streams figure to-day more prominently than the laboratory? 2133-6.
What is the aim of zoölogy? 2133-6.
What is the first period of knowledge regarding animal life? 2133-6.
At that time whose work showed the highest development of zoölogical study? 2133-6.
Who was the Father of Natural History? 2133-6.
Was Pliny's work an advance or retrogression? 2133-6.
What was the attitude of the priesthood toward inquiry into nature? 2133-6.
Who led the intellectual movement in the sixteenth century? 2133-6.
Why was the work of Vesalius helpful to zoölogy? 2133-6.
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PEDAGOGICS

1. THE TERM IN ITS LARGER SENSE, CONSIDERING EDUCATION AS AN ASPECT OF LIFE IN GENERAL.
    a. As related to environment: 1437.
        (1) Environment of the age in which one lives.
        (2) Environment of one's country and community.
    b. The individual factors: 1437.
2. PEDAGOGICS IN THE RESTRICTED SENSE AS RELATED TO THE WORK OF THE SCHOOL:
    a. Development of the activities of the child: function of the school: 1437.
    b. Function of the teacher: 1438.
    c. Nature of education: 1438.
    d. Nature of the act of learning: 1438.
        (1) By observation.
        (2) By experimentation.
        (3) By reasoning.
    e. Teaching the art of stimulating and guiding the self-activity of the child: 1438-9.

THE DIVISIONS OF THE SUBJECT:

a. History of Education.
b. Philosophy of Education.
c. School Organization and Management.
d. Methodology.

I. HISTORY OF EDUCATION:

1. VALUE OF THE STUDY OF HISTORY OF EDUCATION: 584.
2. FIVE EPOCHS IN EDUCATIONAL HISTORY: 584.
3. EDUCATION MIDDLE AGES: 1695.
4. INFLUENCE OF THE REFORMATION: 1695.
5. INTRODUCTION OF POPULAR SYSTEMS IN GERMANY, HOLLAND, SCOTLAND, FRANCE, ENGLAND AND UNITED STATES: 1695.
6. AIMED AT RELIGIOUS ENDS: 1695.
7. RADICAL DEPARTURE OF MODERN EDUCATION FROM OLD IDEALS.
    a. In respect to aim: 584.
        (1) Progressive ideals.
        (2) Social efficiency.
        (3) Vocational training.
        (4) Extension to all classes.
    b. In respect to subject matter: 584.
        (1) Enlargement of curriculum.
        (2) Development in elementary schools.
        (3) Technical and vocational studies.
    c. In method: 585.
        (1) Psychology as bearing upon method.
        (2) Mechanical memory-work displaced.
        (3) Inductive method.
        (4) Appeal to powers, instincts and interests of pupil.
        (5) Correlation of studies: 460.
    d. In organization: 585.
        (1) State systems in place of religious or private control.
        (2) Development of public school system under state supervision and support.
        (3) Large funds for educational purposes.
        (4) Professional training for teachers.

e. **Elementary Schools:** 1695-96.
   (1) Rise of popular education.
   (2) Influence of Pestalozzi.
   (3) Expansion of curriculum.
   (4) Systems in Germany, France and England.
   (5) Elementary education in the United States.
   (6) Work of Horace Mann.
   (7) Development of the system.

f. **Secondary Schools:** 1701-02.
   (1) Origin and aim.
   (2) Present system in Germany, France and England.
   (3) In the United States.

g. **Academies:** 1702.
   (1) Time when they came in.
   (2) A result of what movement.
   (3) How they in large measure took the place of the grammar schools.
   (4) How they differed from grammar schools in purposes.
   (5) Academies as finishing schools and as schools for the training of teachers.
   (6) Introduction of new subjects of study.
   (7) Prominence of science in the academies.

h. **High Schools:** 1702.
   (1) A development of the academies.
   (2) The first in the United States.
      (a) The English High School of Boston: 1702.
   (3) How they differed from academies.
   (4) Their public character.
   (5) High Schools as a product of the idea that secondary education should be supported and controlled by the public.
   (6) Their spread over the United States.
   (7) Their number at present.

i. **University Education:** 1986.
   (1) Origin and organization of the modern university: 1986.
   (2) History of universities of Europe: 1987.
   (3) The first American Universities:
      (a) Harvard: 1988.
         1 The time of its foundation.
         2 How it received its name.
      (b) William and Mary College: 2088.
         1 Time of its foundation.
         2 Men trained here in the Colonial period.
      (c) Yale: 2120.
         1 How it received its name.
         2 Time and occasion of its establishment.
   (4) Establishment of the State Universities: 1988.
      (a) Period of establishment.
      (b) Government aid in establishing.
      (c) First state universities.
      (d) The University Extension movement.
      (See Index under University).

j. **Rural Schools:** 1697.
   (1) Character and scope in the United States.
   (2) Course of Study.
   (3) Organization and government.
   (4) Support: 1698.
   (5) Teachers: 1698.
   (6) Buildings: 1699.
   (7) Improvement of Rural Schools: 1699.
   (8) Consolidation of Schools and transportation of pupils: 1700.
   (9) Conventions of School-officers: 1700.

(10) Rural High Schools: 1700.
(11) Educational Extension: 1701.
(12) Bibliography: 1701.

k. **Summer Schools:** 1702.
(1) Chautauqua type.
(2) Summer-session of Universities, etc.
(3) Credit toward degree for work done.
(4) Training of teachers.

l. **Schools for Defectives:** 1703.
(1) Methods for teaching the deaf:
(a) Sign language.
(b) Manual alphabet.
(c) Direct or oral method.
(2) Methods for the blind:
(a) Raised letters.
(b) Braille system.
(3) Methods for feeble-minded:
(a) Industrial and kindergarten training.

m. **Schools of Commerce:** 1703.
(1) Private commercial schools: 1704.
(2) Public High Schools: 1704.
(3) Commercial Schools in Europe: 1703.
(4) Commercial courses in American Colleges and Universities: 1704.

n. **Vacation Schools:** 1997.
(1) An extension of public school system.
(2) How conducted.
(3) Study and recreation combined.
(4) Beneficial results.

o. **Industrial Schools:** 924.
(1) A substitute for apprenticeship.
(2) Advantages over apprenticeship.
(3) German system.
(4) Industrial training in public schools.
(5) Schools of industrial design.
(6) First public industrial school in U. S.

p. **Continuation of Schools:** 448.
(1) Object of continuation work.
(2) Vocational training.
(3) Work of Y. M. C. A.
(4) Continuation schools in Germany, France and other countries.

q. **Excursion Schools:** 640-41.
(1) Nature-study excursions.
(2) Out-door geography work.
(3) Historical work.
(4) Visits to public institutions.
(5) Excursion Schools in Germany.
(6) Difficulties and advantages in excursion work.

r. **Technical Schools:** 1879.

s. **Trade Schools:** 1931.
(1) Nature and object of trade-schools.
(2) When and where first founded.
(3) Courses of instruction.
(4) Privately endowed.
(5) Names of principal trade-schools.

t. **Kindergarten:** 1002-03.
(1) Outgrowth of great reform movement by Froebel.
(2) Underlying principles.
(3) Methods based on child-nature.
(4) Results based on reports of teachers.
(5) Thorough training of teachers essential.
(6) First establishment and wide growth of kindergartens.

u. **The School Garden:** 1690-91.
   (1) Outgrowth of school-work.
   (2) Relation to nature-study.
   (3) Relation to geography.
   (4) Relation to esthetics.
   (5) Relation to the home.
   (6) Educative effect on pupils.
   (7) Value to teachers.
   (8) School gardens in Europe.
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v. **Correspondence Schools:** 461.

w. **American Colleges:** 422:23.
   (1) Courses of Study.
   (2) Conditions of admission.
   (3) Elective studies.
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   (5) Aim greatly broadened.
   (6) College Fraternities.
   (7) Athletics.
   (8) Attendance, instructors and endowments.
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   (2) Value of college course.
   (3) Result as related to practical life.
   (4) Selection of college.
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   c. **Influence in modifying the method of teachers:** 1557.
   d. **Inductive method:** 1557.
   e. **Analytic method instead of synthetic; word method in teaching reading:** 1558.
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   d. Self activity basis of the will, effort and interest: 1720.
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   b. Disciplinary value of certain studies: 1204.
   c. Opposing views of Herbart: 1204.
   d. Discipline a factor in choosing school curriculum: 1204.
   e. Value of correlation: 1205.

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   c. Memory differs in degree and kind: 1201.
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   a. The erection of the school building: 1699.
      (1) Selection of the proper site.
      (2) Aid to be obtained from the state in designing
   b. School sanitation: 1691-92.
      (1) What is included in the subject: 1691.
      (2) Heating and ventilation: 1692.
      (3) Problem of providing for sufficient light: 1692.
      (4) Need of having adjustable seats and desks: 1692.

3. ORGANIZATION AND CONDUCT OF THE SCHOOL:
   - a. The course of study:
     - (1) Correlation of the course of study: 460.
       - (a) What is meant by correlation: 460.
       - (b) The views of Herbart, Froebel and Dewey: 460.
       - (c) Subjects which may most easily be correlated: 461.
   - b. Discipline and punishment:
     - (1) Theory of punishment in general: 1562.
     - (2) The proper aim in punishment in school: 1563.
     - (3) Partial solution of the problem:
       - (a) In activity and interest of children in the school: 1563.
       - (b) In self-government: 1563.

4. THE SCHOOL GARDEN: 1504, 1690.
   - a. Relation of the school garden to regular school study: 1690.
   - b. Values to be realized by use of garden: 1691.
   - c. Relation of the garden to the home of the children: 1691.
   - d. Manual training in the care of the school garden: 1691.
   - e. The garden in the teaching of nature study: 1690.

5. PROBLEMS OF SPECIAL TYPES OF SCHOOLS:
   - a. Rural Schools: 1697.
   - b. Summer Schools: 1702.
   - c. Schools for Defectives: 1703.

IV. METHODOLOGY.

1. METHOD IN THE TEACHING OF ARITHMETIC:
   - a. The Subject-Matter of Arithmetic:
     - (1) The essential subjects to be taught in arithmetic: 97.
     - (2) Why it is advisable to drop certain subjects commonly taught: 97.
     - (3) The test of a good topic: 98.
     - (4) What some of the new valuable subjects are: 98.
     - (5) The change in recent text-books: 98.
   - b. The right aim in teaching arithmetic: 98.
   - c. The significance of the answer to a problem:
     - (1) How far the answer should be emphasized: 98.
   - d. Value of interest in a problem:
     - (1) The effect of interest on concentration of attention: 98, 932.
   - e. Arithmetic teaching in the first two grades:
     - (1) Informality of the subject in the first year: 98.
       - (a) Reasons for this: 98.
     - (2) How counting should be taught and utilized: 98.
     - (3) Measuring and what it should involve in the first two years: 98.
     - (4) Teaching of fractions:
       - (a) Why teach them early: 98.
       - (b) Devices to make the steps clear: 98.
     - (5) Method in subtraction: 98.
   - f. Arithmetic in the third, fourth, and fifth grades:
     - (1) Reduction, ascending and descending: 99.
       - (a) To what this should be confined: 99.
     - (2) Decimal fractions: 99.
       - (a) When decimal fractions should be taught: 98.
       - (b) The best methods of teaching multiplication and division of decimals: 99.
   - g. Arithmetic in the sixth and seventh grades.
     - (1) Where the main value in the arithmetic work here lies: 99.
     - (2) Importance of correlation: 99.
     - (3) How to teach percentage: 99.
     - (4) Use of equation in arithmetic: 99.
     - (5) Place and value of oral work: 99.
     - (6) How to emphasize the thought side of a problem: 99.
     - (7) Confusion arising from home help: 100.

2. **METHOD IN THE TEACHING OF GEOGRAPHY:**
   - a. **The scope of the subject of geography:**
     - (1) Definition: 745.
     - (2) How geography differs from physiography: 746, 1482.
   - b. **Geography, how divided:**
     - (1) Physical geography: 745.
     - (2) Political geography: 745.
     - (3) Commercial geography: 745.
     - (4) Medical geography: 745.
     - (5) Oceanography: 745.
   - c. **Geography, its relation to the sciences:**
     - (1) Geology: 747.
     - (2) History: 747.
     - (3) Astronomy: 127.
   - d. **Geography in the first three grades:**
     - (1) The aim here: 746.
     - (2) Geography as incidental to the study of primitive life and nature study: 746, 1308.
   - e. **Geography in the third and following grades:**
     - (1) Geography as a separate subject here: 746.
     - (2) Home geography as the first study taken up; nature study in this: 746, 1308.
     - (3) Importance of emphasis on the casual idea: 746.
     - (4) How the new geography differs from the old: 746.
     - (5) Dynamic character of geography when properly taught: 746.
     - (6) Aids in geography teaching:
       - (a) The magnet: 1145; compass, 435; barometer, 174; dial, 526; thermometer, 1900.
     - (7) The necessity of laboratory and field work: 746.
     - (8) Sources of information: 746.

Note: Refer to Outline on Geography, Pages 11-15, "The Student's Manual."

3. **METHOD IN THE TEACHING OF HISTORY:**
   - a. **The values of history to be realized:** 876.
     - (1) Main value lies in helping people to understand the present.
     - (2) Instruction which history furnishes in way of human life and character.
     - (3) Furnishing of ideals of conduct.
   - b. **Why the history of one's own country is most valuable:** 876.
   - c. **Beginning of history work in the third grade:** 876.
     - (1) Use of history stories here.
     - (2) Value of skillful story telling.
   - d. **Use of American history as the subject for elementary history:** 876.
     - (1) The divisions of the subject into periods for purposes of teaching.
       - (a) Period of exploration on sea and land.
       - (b) Period of settlement and colonial development to 1763.
       - (c) The struggle with England, the war for independence, the adoption of the Constitution.
       - (d) The growth of the country under the constitution.
   - e. **How to make the history work most valuable:** 876.
     - (1) Select the more interesting and striking phases.
     - (2) Make use of biography to a great extent.
     - (3) Supply by reference books or otherwise, material on customs of the people.
     - (4) Use source materials.
     - (5) Do not make use of long chronological tables.
     - (6) Use charts to get view of contemporary history and historical order: See History Charts: 877.
     - (7) Use population maps and other devices.
     - (8) In upper grades encourage independent study.

Note: Refer to Outline on History, pages 18-30, "The Student's Manual."

4. **METHOD IN THE TEACHING OF LANGUAGE:**
   - a. **What is included in language work in school:** 1026.
     - (1) The broad meaning.
     - (2) The narrower meaning.

b. **The two general problems in language teaching:** 1026.
   (1) To extend child's power to use language.
   (2) To correct his language errors.

c. **Experience at base of all language work:**
   (1) Varieties of experience to be worked with: 1026.
   (2) What good language work does for child experience: 1026-7.

d. **Method in oral and written language:** 1027.
   (1) Means suggested to assist written work.
   (2) How the teacher may improve the oral English of pupils:
      (a) Encourage children to speak freely on interesting subjects.
      (b) Incidental suggestions correcting mistakes when made.
      (c) Get pupils to give conscious attention to forms of speech.
   (3) Formal correction of language errors in upper grades: 1027.
      (a) Steps in formal correction:
         1. Errors recognized.
         2. Correct form determined by means of grammar.
         3. Correct form made habitual by drill.

e. **Grammar:**
   (1) Formal grammar not so important as formerly: 1027, 790.
   (2) Dependence for correct English on correct use without many rules: 1027.
   (3) Lack of formal grammar in first six years of school: 1027, 790.
   (4) Grammar in the seventh and eighth grades: 1027, 791.
      (a) Pupils usage made the basis for inductive study: 1027, 791.
      (b) Mainly a matter of classification essential to guidance of oral and written expression: 1027.
      (c) Language treated as an art, not a science: 1027.

f. **Foreign languages:** 1027, 791.
   (1) Oral work: 1028.
   (2) Written composition: 1028.

5. **METHOD IN THE TEACHING OF MANUAL TRAINING:**

a. **What manual training in the wide sense includes:** 1162.
   (1) Shop and desk work.
   (2) Domestic science.
   (3) Domestic art.

b. **Value in manual training:**
   (1) Giving of useful skill and knowledge: 1163.
      (a) Commercial value of manual dexterity.
   (2) Development of motor control: 1163.
   (3) Development of observation and judgment: 1163.
   (4) Values on artistic side: 1163.
   (5) Object of stick laying, paper folding, tracing, clay modelling and weaving: 1164.

c. **Desk and shop work:**
   (1) Desk work in early grades: 1163.
      (a) Use of ordinary desks: 1165.
      (b) Working outline lessons for 23 weeks: 1164.
      (c) Basketry: 179.
      (d) Drawing: 551.
   (2) Shop work in upper grades:
      (a) Materials used: 1165.
      (b) Tools required: 1163, 1165.

d. **Domestic Art:** 542.
   (1) What is included in domestic art.
   (2) Special values in the subject.
   (3) The development of taste and skill.

e. **Domestic Science:**
   (1) Branches taught: 542.

(2) Where the emphasis is laid in teaching domestic science: 542.
(3) Domestic science in the upper grades: 542.

f. **Industrial schools in relation to manual training:** 924.

6. **METHOD IN THE TEACHING OF MUSIC:**

a. **The primary purpose of music teaching in school:** 1286.
b. **Means of accomplishing the purpose:** 1286.
(1) Experience: imitative singing.
(2) Classification of ideas and application of musical ideas: sight singing.
(3) Use of concrete ideas in musical composition.
(4) Use of musical instruments.
c. **Method in the first phase of music teaching.**
(1) Accurate imitation of what is heard and holding it in memory: 1286.
(2) Classification of ideas: 1287.
(a) Ideas dealing with interpretation of music.
(b) Ideas dealing with structure.
(c) What is taught under each.
(3) The main difficulty in forming general musical ideas: 1287.
(4) Importance of doing what is observed: 1287.
(5) How to clarify ideas obtained.
(a) Various devices.
d. **Method in the second and third phases.**
(1) How the process in the second phase is the reverse of that in the first: 1287.
(2) The development of ability to conceive of and reproduce motives: 1288.
(a) Value of instrumental music here.
(b) Need of careful guidance of pupils.
(c) Use of pianola and similar instruments.
e. **General assemblies and festivals in teaching of music.**
(See article on The School-Song, 1692.)
(1) Occasions for festivals.
(2) Festivals as furnishing motives for music work.
(3) Combination of music and the drama in the festival.
f. **Musical Notation:** 1288.
(a) Art of representing tones by printed characters.
(1) Structural Ideas:
(a) Pulse-grouping: 1289.
(b) Tone-duration: 1289.
(c) Pitch-representation: 1290.
(d) Key-signature: 1290.
(e) How indicated in written music: 1290.
g. **Harmony.**
(1) Chord: 838.
(2) Tonality: 839.
(3) Melody: 840.
(4) Key: 840.
(5) Scale: 840.
h. **Form in Music.**
(1) Mode of expression: 694.
(a) Vocal and instrumental.
(b) Choral and orchestral.
(2) Function: 694.
(a) Secular.
(b) Ecclesiastical.
(c) Religious.
(3) Character: 694.
(a) Lyric.
(b) Dramatic.
(c) Programatic.
(4) Structural ordering: 694.

(5) Melodic material: 694.
(6) Illustrative examples: 695, 696.

i. **Religious Music:** 1284.
(1) Essential characteristics: 1285.
(2) Importance of association: 1285.
(3) Why secular music is inappropriate for religious use: 1286.
(4) Type of effective religious music: 1286.
(a) Long used for religious purposes.
(b) Employing form not adapted to secular use.
(c) Effective musically.

j. **School Song:**
(1) Importance of careful selection: 1692.
(2) Imitative and dramatic period: 1692.
(a) Model selections, with suggestions for teaching: 1693.
(b) First step: 1693.
(c) Advanced step: 1693.
(d) Teaching points to gain expressive use of song: 1693.
(3) Investigative period: 1694.
(a) First step; use of descriptive songs.
(b) Illustrations.
(c) Advanced step; songs to promote sight-singing.
(d) Illustrations.
(4) Constructive period: 1694.
(a) Work in upper grades.
(b) First step.
(c) Advanced step.
(d) Illustration.
(5) Work in High School: 1695.
(a) Difficulties and how to meet them; chorus work.
(b) Appropriate selections.
(6) General assemblies and festivals: 1695.
(a) Festivals.
(b) Suggestions for this class of work.

k. **Musical Tones:** 8.
(1) The musical scale: 9.

7. **METHOD IN THE TEACHING OF NATURE STUDY:**

a. **Nature Study as a school subject:** 1307.
(1) What nature study includes.
(See outline on Nature Study in "The Student's Manual.")
(2) Basis of nature study in interests and activities of children.
(3) Importance of nature study in early school years.
(4) Relation of nature study to school science.
(a) Function of nature study as an introduction to science.
(b) How nature study gradually differentiates in the upper grades and high school into geography, botany, physics, etc.: 1308.

b. **Purposes in teaching the subject:** 1308.
(1) Development of perceptive faculties, observation, understanding, memory, judgment and language.
(2) Development of genuine love of nature.
(3) Extend the child's range of experience.

c. **The material to be used:** 1308.
(1) Principles involved in selection.
(2) Materials for study in early grades according to season of the year.

d. **The key to method:** 1309.
(1) Emphasis on function.
(2) Continual use of problems both in beginning and continuing study.

e. **Utilization of vacation experiences of children:** 1308.
(1) Subjects for study and discussion.

(2) Material collected during summer.
(a) The school museum.

f. **Nature Study Excursions:** 640-41.
(1) Main purposes:
(a) To bring into contact with outside world.
(b) To give direct experience.
(c) To give reality to study.
(d) To make work more objective and concrete.
(2) Necessity of seeing objects in their natural situations.
(3) Interest in work given by excursions.
(4) How the advantages outweigh the disadvantages.

g. **The camera in nature study:** 1309.
(1) Value of camera in excursions.
(2) What the camera can do in nature study.
(3) The kind of training which use of camera gives.
(4) The camera as a source of material for study.

h. **The school garden in nature study:** 1690.

8. METHOD IN THE TEACHING OF PENMANSHIP:

a. **The three typical systems of handwriting:** 1445.
(1) The slant, the medial, and the vertical.

b. **Main requirements in teaching penmanship:** 1445.
(1) Legibility.
(2) Speed.
(a) Less demand for this than formerly.
(3) Ease.
(4) Individuality.

c. **The first years of penmanship work:** 1445.
(1) Little or no penmanship in the first year of school.
(2) The first work.
(a) Use of the blackboard.
(b) Seat work with pencil.
(c) Necessity of practice.
(d) Use of dictation exercises.
(e) The method emphasizing accuracy at first.
(f) Method emphasizing form first with accuracy to follow.
(3 After the first, personal variations from the model allowable.

d. **Penmanship made a special subject after the sixth grade:** 1446.

e. **The important considerations in the seventh end eighth grades:** 1446.

f. **Individual work in correction:** 1446.

9. METHOD IN PHYSICAL EDUCATION.

a. **What physical education includes:** 1480.
(1) The more general meaning:
(a) Physical examination of pupils and students.
(b) Personal direction in matters of health.
(d) Class instruction in hygiene.
(d) Gymnastics and athletics.
(2) The more technical meaning.

b. **Increased importance of physical education:** 1481.
(1) Requirements of healthful and successful living.
(2) Lack of physical exercise and training in modern conditions of living.

c. **Physical education as a means of insuring normal development:** 1481.
(1) The furnishing of opportunity.
(2) By furnishing incentive.

d. **Means of physical education.**
(1) Plays, dances, and games: 734-35.
(See the psychology of play under "Child-Study," p. 385.)
(a) Importance of these compared with gymnastics: 817, 1841.

(b) Elements and opportunities for these supplied by school subjects.
(2) Athletics: 131.
(3) Gymnastics: 817.
(a) How formal gymnastics lack in educational values: 1841.
(b) Proper use of gymnastics as corrective: 817.

e. **The program in physical culture:**
(1) The kindergarten and first years of elementary school: 1481, 1003.
(a) Character of exercises.
(b) No activities requiring fine adjustments.
(c) Place of marching and drill, climbing, swinging movements, games of skill.
(2) Grammar grades: 1481.
(a) Prominence of games and exercises requiring skill.
(b) Group games.
(3) Physical education in early adolescence: 1481.
(a) Consideration of individual weaknesses.
(b) Emphasis on use of apparatus.

10. **METHOD IN THE TEACHING OF READING:**

a. **Divisions according to aspects emphasized:** 1590.
(1) Beginning reading.
(2) Thought-reading.
(3) Appreciative reading.

b. **Beginning Reading:** 1590.
(1) What is involved in mastering mechanics of reading:
(a) The new and strange printed forms.
(b) Oral words.
(c) Experiences already within his command.
(2) The main effort of the teacher in beginning reading.
(3) The two general methods of approach.
(a) The thought-method.
1. What is involved.
2. The main reliance in this method.
(b) Phonetic method:
1. Emphasis on pronunciation units which make up words.
2. The theory at the base of this method.
3. Artificial character of phonetic methods.
4. The main phonetic methods.
(c) Combination of the phonogram method and the though-method is the best.
(d) The final aim.

c. **Thought Reading:** 1591.
(1) To what the term is applied.
(2) Purpose in thought reading.

d. **Appreciative Reading:** 1591.
(1) Meaning of "appreciative reading."
(2) Purpose.

e. **Special reading methods in school and special purpose of each:** 1591.
(1) Oral reading.
(2) Silent reading.
(3) Individual reading.
(4) Concert reading.
(5) Prepared reading.
(6) Sight reading.
(7) Intensive reading.
(8) Extensive reading.
(9) Supplementary reading.